RCA VICTOR

SUPPLEMENT
TO
TELEVISION SERVICE DATA
1960 No. T6

This Service Data supplements RCA Victor Service Data 1960 No. T6, adding the models shown below to those covered in 1960 No. T6.

All models are "23 inch" television receivers featuring full 12 channel VHF coverage. Models with the "U" Suffix in the model number also feature coverage of any of the 70 UHF channels.

Models 231-BR-615-6 & 7 are remote control instruments providing wireless control of the "Off", "Channel", "Volume" and "Standby" functions of the receiver. Control is accomplished with a two button remote control hand unit.

PREPARED BY COMMERCIAL SERVICE
RCA SERVICE COMPANY
A DIVISION OF
RADIO CORPORATION OF AMERICA
CAMDEN 8, N. J.

TELEVISION SERVICE DATA

— 1960 No. T6-S2 —

FOR

KCS131 & KCS132 CHASSIS SERIES

MODEL AND CHASSIS REFERENCE

MODEL	CABINET TYPE	CHASSIS	TUNER MOUNTING ASSEMBLY	TUNER	DEFLECTION	KINESCOPE
231-B-612 & 5 231-B-616 & 7	Table	KCS132D	TMA13T	KRK96J	110°	23EP4
231-B-612U & 5U 231-B-616U & 7U	Table	KCS132E	TMA13N	KRK97J KRK66AF	110°	23EP4
231-B-612SU & 7SU	Table	KCS132F	TMA13U	KRK87W	110°	23EP4
*231-BR-615 & 6 *231-BR-617	Table	KCS132H	TMA15A	KRK87N	110°	23EP4
231-D-645 & 6 231-D-647	Console	KCS132K	TMA13T	KRK96J	110°	23EP4
231-D-645U & 6U 231-D-647U	Console	KCS132L	TMA13N	KRK97J KRK66AF	110°	23EP4

The final numeral in the model number designates the cabinet finish, as follows:—2-BLACK, 5-MAHOGANY, 6-WALNUT and 7-OAK.

* These models incorporate a KRT1B (2 Button) Remote Control Transmitter and a KRS24C Remote Control Amplifier.

REFER TO SERVICE DATA 1960 No. T6 FOR COMPLETE SERVICE INFORMATION COVERING INSTALLATION, SET-UP AND ALIGNMENT OF THESE RECEIVERS. THE MODELS LISTED ABOVE ARE IDENTICAL TO RECEIVERS COVERED IN SERVICE DATA 1960 No. T6 EXCEPT AS INDICATED IN THIS PUBLICATION.

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SYMBOL NO.	STOCK NO.	DESCRIPTION
		TMA13N, T & U TUNER MOUNTING ASSEMBLIES *Same as original listings in 1960 No. T6*
		TMA15A TUNER MOUNTING ASSEMBLY *Same as original listing in 1960 No. T6*
		KRK87N & W VHF & UHF/VHF TUNER ASSEMBLIES *Same as original listing in 1960 No. T6*
		KRK96J VHF TUNER ASSEMBLY *Same as original listing in 1960 No. T6 except change the following items to read:*
C13	104052	Capacitor—Trimmer, .5 to 3.0 mmf.
C19	107232	Capacitor—Ceramic, 39 mmf., ±10%, 500 v.
R11	106253	Resistor—8200 ohms, ±10%, 3 w.
R13	———	Resistor—39,000 ohms, ±10%, 2 w.
		KRK97J VHF TUNER ASSEMBLY *Same as original listing in 1960 No. T6 except change the following items to read:*
R5	106253	Resistor—8200 ohms, ±10%, 3 w.
R10	———	Resistor—15 ohms, ±20%, ½ w.
R18	———	Resistor—39,000 ohms, ±10%, 2 w.
		KRK66AF UHF TUNER ASSEMBLY *Same as original listing in 1960 No. T6*
		KRT1B REMOTE CONTROL TRANSMITTER ASSEMBLY (2 Button) *Same as original listing in 1960 No. T6*
		KRS24C REMOTE CONTROL AMPLIFIER *Same as original listing in 1960 No. T6*
		CHASSIS ASSEMBLIES KCS132D, E, F, H, K & L *Same as original listing in 1960 No. T6 except change the following items to read:*
C108	———	Ceramic—560 mmf., ±10%, 1000 v.
C112	———	Ceramic—330 mmf., ±10%, 2000 v.
C123	109410	Paper—0.22 mf., ±20%, 600 v.
C247	104131	Ceramic—2700 mmf., ±10%, 500 v.
L110	109289	Coil—Peaking 250 UH
R106	———	6800 ohms, ±10%, 3 w.
R116	———	2.2 megohms, ±20%, ½ w.
R117, R118	———	150 ohms, ±10%, ½ w.
R124	107464	Temp. compensating 12.92 ohms, cold ±20% (Part of yoke)
R136	109241	3900 ohms, ±10%, 1 w.
R206	———	27,000 ohms, ±10%, 2 w.
R215	———	2700 ohms, —10%, ½ w.
R529	———	1.8 megohms, ±10%, ½ w. (KCS132)
		Add the following items:
C128	———	Paper—0.22 mf., ±20%, 400 v.
C209	73960	Ceramic—.01 mf., 500 v. (KCS132)
C210	109060	Ceramic—3900 mmf., ±10%, 1000 v. (KCS132)
C217	———	Ceramic disc.—10 mmf., ±5%, 500 v. NPO (KCS132)
C218	109438	Ceramic—110 mmf., ±5%, 500 v. (KCS132)
C248	109327	Ceramic—33 mmf., ±10%, 500 v. (KCS132)
C508	———	Paper—.0047 mf., ±10%, 200 v.
PW200	109313	Circuit—Printed video circuit less tubes—KCS132D, E, F, K, L
PW200	109314	Circuit—Printed video circuit less tubes—KCS132H
R102	107334	Control—On-off-volume—KCS132K, L
R102	107388	Control—On-off-volume—KCS132D, E, F
R102	109491	Control—On-off-volume—KCS132H
R104	109387	Control—Vertical hold—KCS132D, E, F, H, K & L
R114	———	390,000 ohms, ±10%, ½ w. (KCS132H only)
R120	107627	Control—Horizontal hold—KCS132D, E, F, H, K & L
R139	———	6.8 megohms, ±10%, ½ w.
T101	109299	Transformer—Audio output, KCS132K, L
T101	109304	Transformer—Audio output, KCS132D, E, F & H
		MISCELLANEOUS *Use listing below in place of original listing in 1960 No. T6*
	109497	Back—Cabinet for 231B612-5-6-7-U & SU, 231BR615-6-7
	109543	Back—Cabinet for 231D645-6-7 & U
	109391	Bumper—Kine mounting strap (rubber)
	Z4800	Cabinet—Black for 231B612-U & SU
	Z4801	Cabinet—Mahogany for 231B615 & U, 231-BR615
	X4810	Cabinet—Mahogany for 231D645 & U
	X4812	Cabinet—Oak for 231D647 & U
	Z4803	Cabinet—Oak for 231B617-U & SU, 231BR617
	Z4802	Cabinet—Walnut for 231B616 & U, 231BR616
	X4811	Cabinet—Walnut for 231D646 & U
	105002	Cable—Power cable and plug
	109064	Can—Coil can (Part of PW200)
	104409	Clamp—Used with 107192
	107329	Clip—High voltage shield assembly
	109138	Clip—Power cord retaining
	100029	Connector—Power input 2 contact male
	109430	Dial—Knob, 13 position, used with 109429
	109431	Dial—Knob, 14 positions, used with 109428
	109187	Escutcheon—Cabinet panel remote control for 231BR615-6-7
	107631	Escutcheon—Microphone
	107467	Foot—Cabinet mounting
	107335	Grommet—High voltage shield
	71851	Grommet—Microphone mounting 231BR615-6-7
	104524	Holder—Fuse F101
	109211	Holder—Remote control transmitter mounting (phenolic) for 231BR615-6-7
	107328	Insulator—High voltage tube socket
	109546	Knob—Dial UHF selector, gray, for 231B-616U-7U, 231D646U-7U
	109545	Knob—Dial UHF selector, wine, for 231B-615U, 231D645U
	109189	Knob—Fine tuning, zinc diecast, for 231BR-615-6-7
	104073	Knob—Selector UHF, brown maroon, for 231-B612U
	104071	Knob—Selector UHF, wine, for 231B615U, 231D645U
	104072	Knob—UHF selector, mocha, for 231B617U, 231D647U
	107621	Knob—UHF selector, woodland brown, for 231B616U, 231D646U
	109429	Knob—VHF channel selector, 13 position, for 231B612SU, 231B617SU
	109428	Knob—VHF channel selector, 14 position, for 231B612-5-6-7 & U, 231D645-6-7 & U
	109130	Knob—VHF control for 231B612-5-6-7-U & SU
	109130	Knob—Volume, contrast, aux. and offset control for 231B612-5-6-7-U & SU, 231BR615-6-7
	———	Lamp—Mazda #47 for 231D645-6-7 & U
	107046	Lamp—Pilot lamp for 231BR615-6-7
	103211	Lamp—Pilot lamp mazda #1847 for 231B-612-5-6-7 & U
	102932	Lead—Anode connector and lead
	X5211	Leg—Cabinet, mahogany, for 231D645 & U
	X5213	Leg—Cabinet, oak, for 231D647 & U
	X5212	Leg—Cabinet, walnut, for 231D646 & U
	107192	Magnet—Centering
	109495	Mask—Kine mask assembly for 231B615-6-7-U & SU
	109494	Mask—Kine mask assembly for 231B612-U & SU
	109496	Mask—Kine mask assembly for 231BR615-6-7
	109534	Mask—Kine mask assembly for 231D645-6-7 & U
	107850	Microphone—Transducer receiver for 231-BR615-6-7
	104652	Motif—"Deluxe"
	109161	Nameplate—"RCA Victor"
	109161	Nameplate—Assembly
	107954	Nut—"J" nut for kine mounting strap
	77013	Nut—For 109549
	109544	Shaft—Contrast control connector for 231-B612-5-6-7-U & SU, 231BR615-6-7
	109439	Shaft—Contrast control connector for 231-D645-6-7 & U
	109044	Socket—Kine
	109317	Socket—Octal for V503
	102787	Socket—Tube for V101, V103
	31251	Socket—Tube for V104
	107207	Socket—Tube for V203, V207, V504
	105780	Socket—Tube for V202, V204
	109037	Socket—Tube for V201, V205, V206
	105313	Socket—Tube for V501
	109533	Socket—Tube for V502
	107324	Socket—Tube for V102, high voltage
	107474	Speaker—4" PM, 3.2 ohms, for 231B612-5-6-7-U & SU, 231BR615-6-7
	107304	Speaker—6" x 9", 3.2 ohms, for 231D645-6-7 & U
	78324	Spring—Back cover assembly
	107953	Spring—Kine mounting strap tension
	76837	Spring—Retaining, used with 109428, 104-071, 109429, 107621, 104072, 107269
	107793	Spring—Retaining, used with 107261, 107-264, 107265
	100584	Spring—Retaining, used with 107260
	109132	Spring—Retaining, used with 109130, 109189
	106950	Spring—Retaining, used with 109546, 109545
	107955	Strap—Kine mounting
	104068	Terminal—Cabinet back, antenna
	107022A	Yoke—Deflection 110°

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1960 No. T6

This Service Data supplements RCA Victor Service Data 1960 No. T6, adding the models shown below to those covered in 1960 No. T6.

All models are "23 inch" television receivers featuring the use of new high-gain low-noise tuners employing a Nuvistor R-F amplifier.

PREPARED BY COMMERCIAL SERVICE
RCA SERVICE COMPANY
A DIVISION OF
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CAMDEN 8, N. J.

TELEVISION SERVICE DATA

— 1960 No. T6-S3 —

FOR

KCS131 & KCS132 CHASSIS SERIES

MODEL AND CHASSIS REFERENCE

MODEL	CABINET TYPE	CHASSIS	TUNER MOUNTING ASSEMBLY	TUNER	DEFLECTION	KINESCOPE
231-BE-625 & 6 231-BE-627	Table	KCS132ZH	TMA20A	KRK98A	110°	23EP4
231-BE-625U & 6U 231-BE-627U	Table	KCS132ZJ	TMA20B	KRK99A KRK66AF	110°	23EP4
231-BE-625SU	Table	KCS132ZK	TMA20C	KRK102C	110°	23EP4
*231-BER-625 & 6 *231-BER-627	Table	KCS132ZL	TMA15B	KRK102A	110°	23EP4
†231-HR-776 †231-HR-788 & 9 †231-HR-797 & 9	Console	KCS132ZM	TMA3P	KRK102B	110°	23EP4

The final numeral in the model number designates the cabinet finish, as follows:—5-MAHOGANY, 6-WALNUT, 7-OAK (7-MOONSTONE for Model 231-HR-797 only), 8-STONE BEIGE and 9-ANTIQUE FRUITWOOD.
* These models incorporate a KRT1B (2 Button) Remote Control Transmitter and a KRS24C Remote Control Amplifier.
† These models incorporate a CRK3E (3 Button) Remote Control Transmitter and a CTP9B Remote Control Amplifier.

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THE NUVISTOR TELEVISION TUNERS

The KRK98A, KRK99A and KRK102A, B & C tuners used in these models are new designs that are referred to as the RCA "NEW VISTA" tuners. These tuners use a new electron tube type called a Nuvistor. The RCA type 6CW4 Nuvistor used in the R-F amplifier circuit of the new tuners is representative of a new development in receiving tube design. Figure 1 shows its remarkably small size — approximately ¾" long and less than ½" in diameter. Although the Nuvistor is small in size, it is big in performance. The RCA 6CW4 Nuvistor tube combined with the especially designed circuitry of these tuners produces a television tuner of superior performance.

The outstanding characteristics of the Nuvistor electron tube are due mainly to the method of manufacture, small size and the materials employed. The metal and ceramic materials used in the fabrication of this new tube result in extremely rugged construction. As shown in figure 1, the cylindrical electrodes are supported on short, tripod-like structures fastened to a ceramic wafer which serves as a support and a part of the tube envelope. This unique cylindrical construction permits all but two of the tube parts to be assembled on a simple jig. This method of manufacture makes it easier to control the dimensions between the close-spaced elements. Close tolerances are

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thus maintained assuring uniform quality and uniform tube characteristics. The small size of the tube elements results in improved cathode efficiency and high-frequency performance.

The rugged design, precise assembly, and controlled processing of the Nuvistor tube minimize or eliminate most of the known causes of tube failure experienced on life tests. Intermittents due to poor welds are eliminated by a brazing process instead of welding. Gas and impurities have been reduced to a minimum by the vacuum process at exceptionally high temperatures.

The base of the new tube is constructed with two indexing lugs. The indexing lugs are slightly longer than the tube pins and not only serve to shield and protect the tube pins during insertion of the tube but also permit safe, easy and rapid insertion. The socket connection arrangement and numbering system are shown in figure 1.

In addition to the benefits derived from assembly and processing, the small-size design feature of the Nuvistor triode makes it possible to produce a television tuner with exceptional performance. The small size and close spacing of the Nuvistor triode elements make it possible to design a VHF R-F amplifier with outstanding low "noise" capabilities and high sensitivity. The low noise feature refers to the low thermal noise of the 6CW4 Nuvistor which is very important to good television reception in weak signal areas.

The superior performance of these tuners is due mainly to the neutralized triode R-F amplifier circuit designed around the 6CW4 Nuvistor tube.

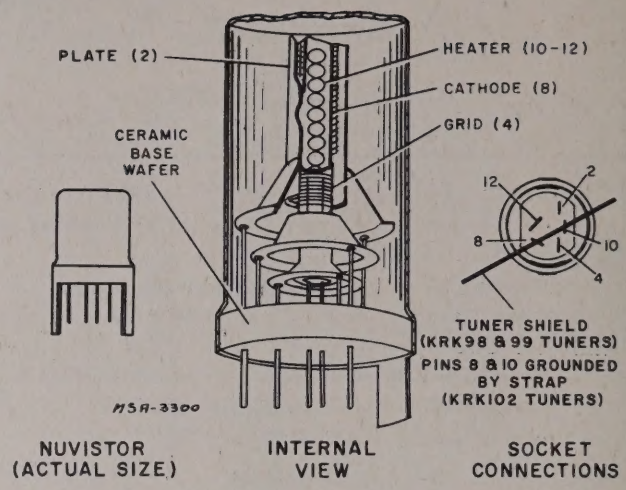


Figure 1—6CW4 Nuvistor Tube and Socket Details

KRK102A, B & C UHF/VHF TUNER SCHEMATIC DIAGRAM

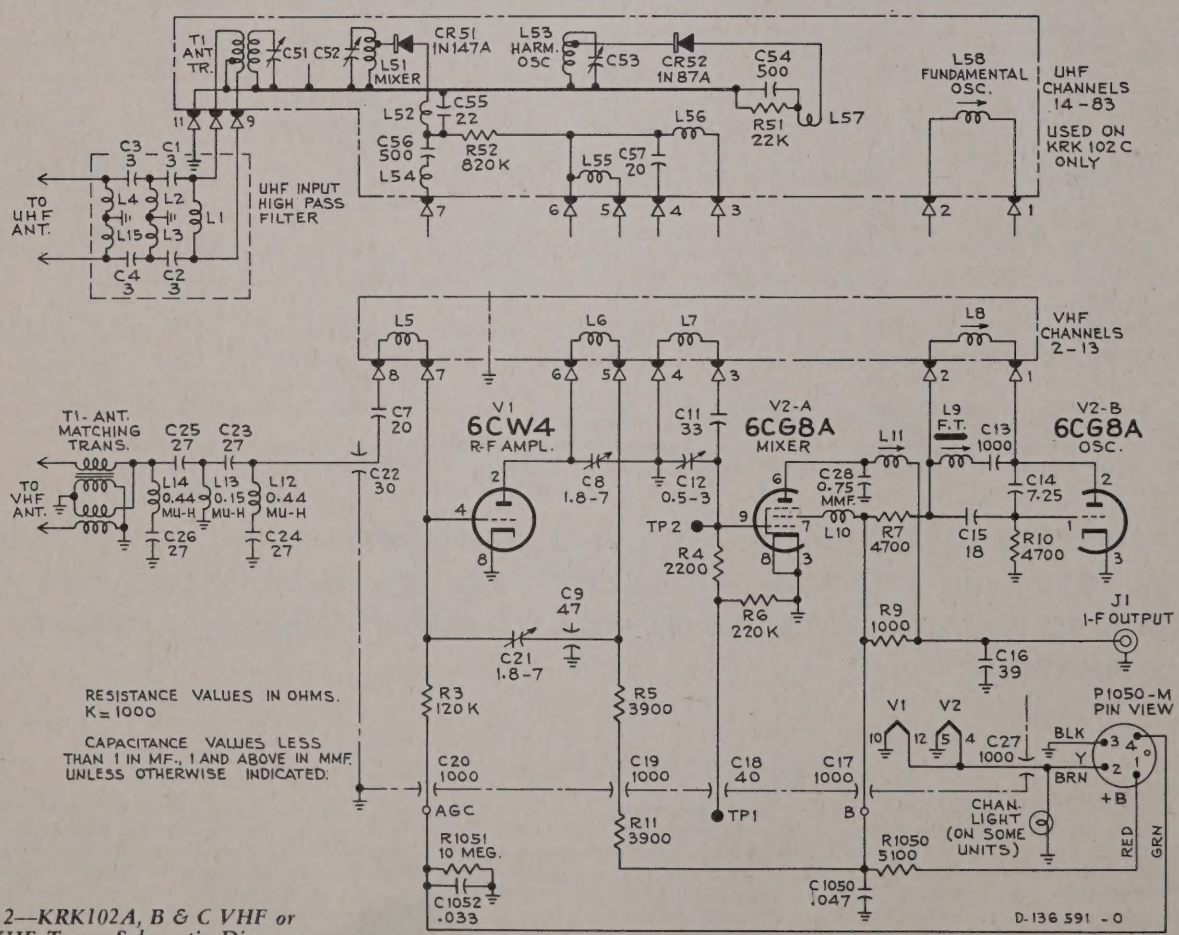


Figure 2—KRK102A, B & C VHF or UHF/VHF Tuner Schematic Diagram for KCS132ZK, ZL & ZM Chassis (Refer to Front Page)

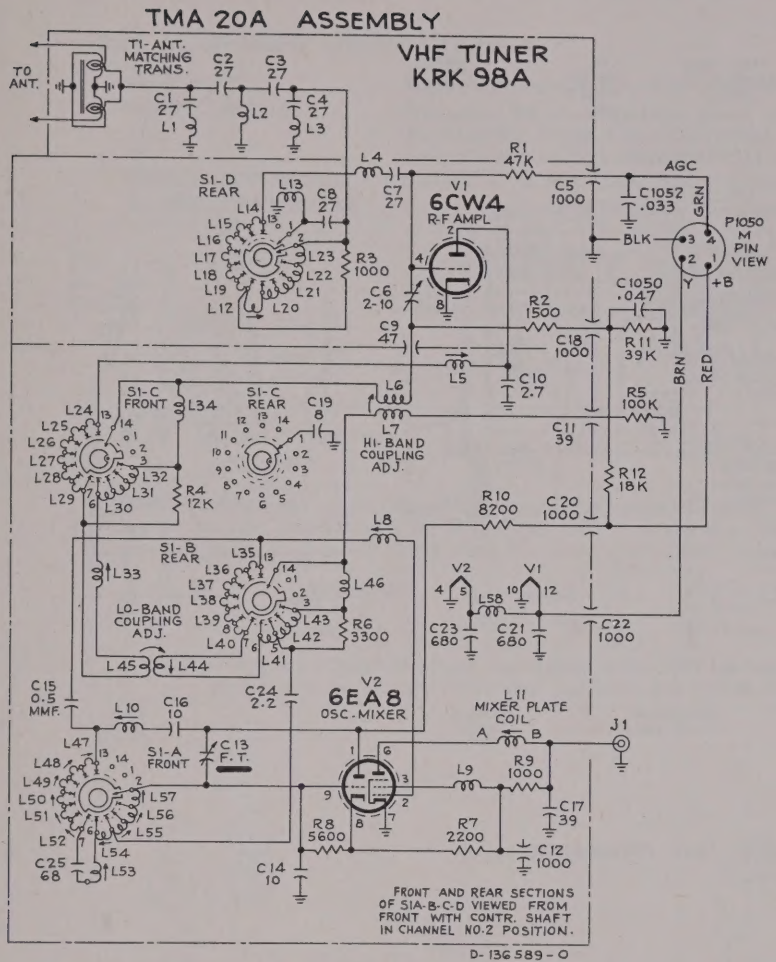


Figure 3—KRK98A VHF Tuner Circuit Schematic Diagram for KCS132ZH Chassis

NOTE: The KCS132ZH chassis referred to above is identical to chassis shown in the large schematic, Figure 10 except for the tuner, which is shown in schematic at the left.

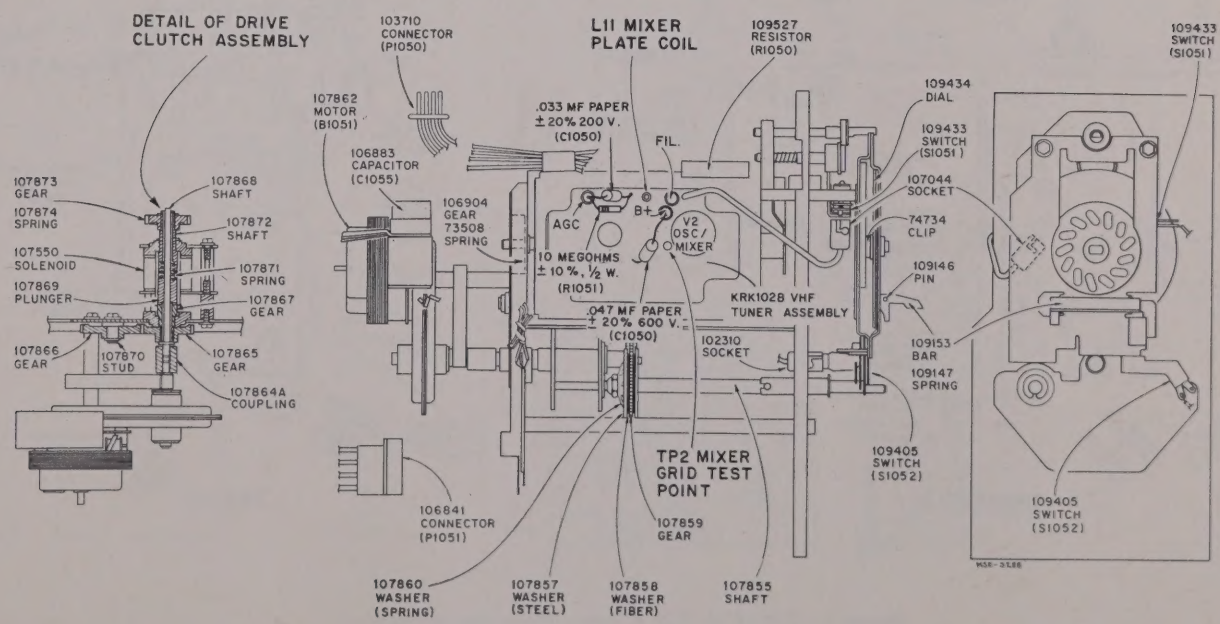


Figure 4—TMA3P Tuner Mounting Assembly

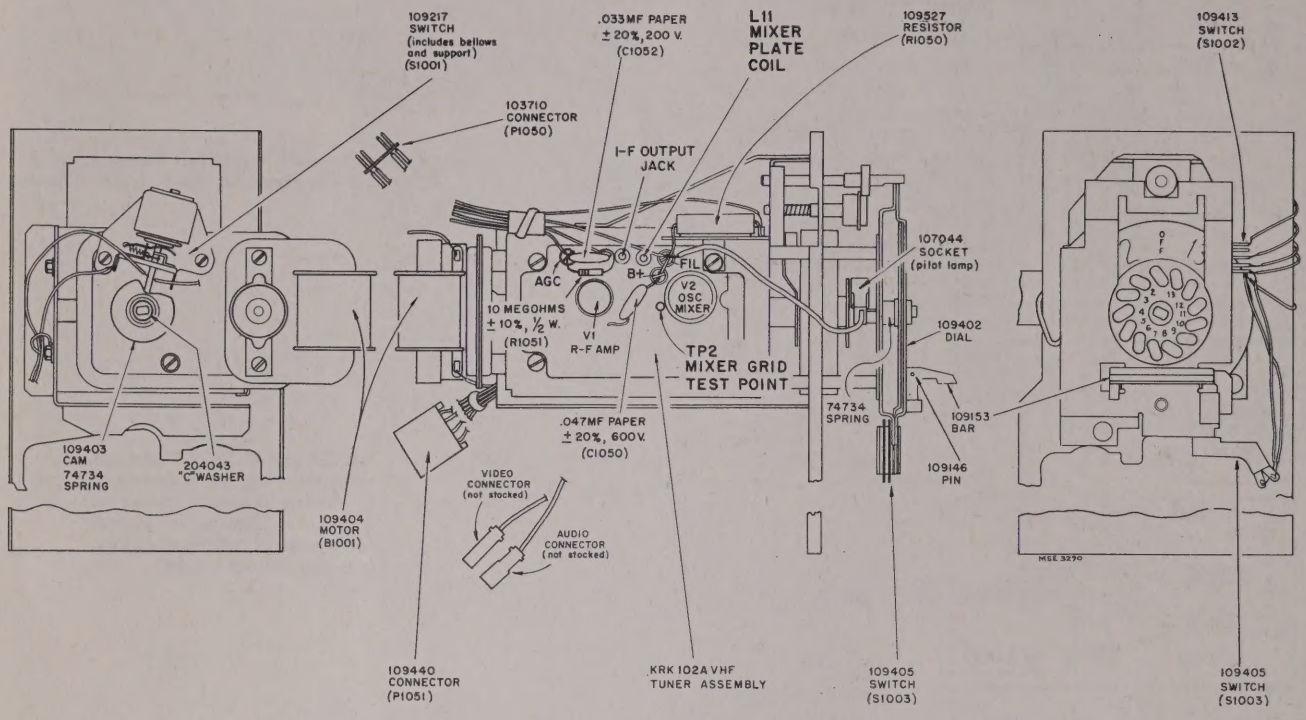


Figure 5—TMA15B Tuner Mounting Assembly

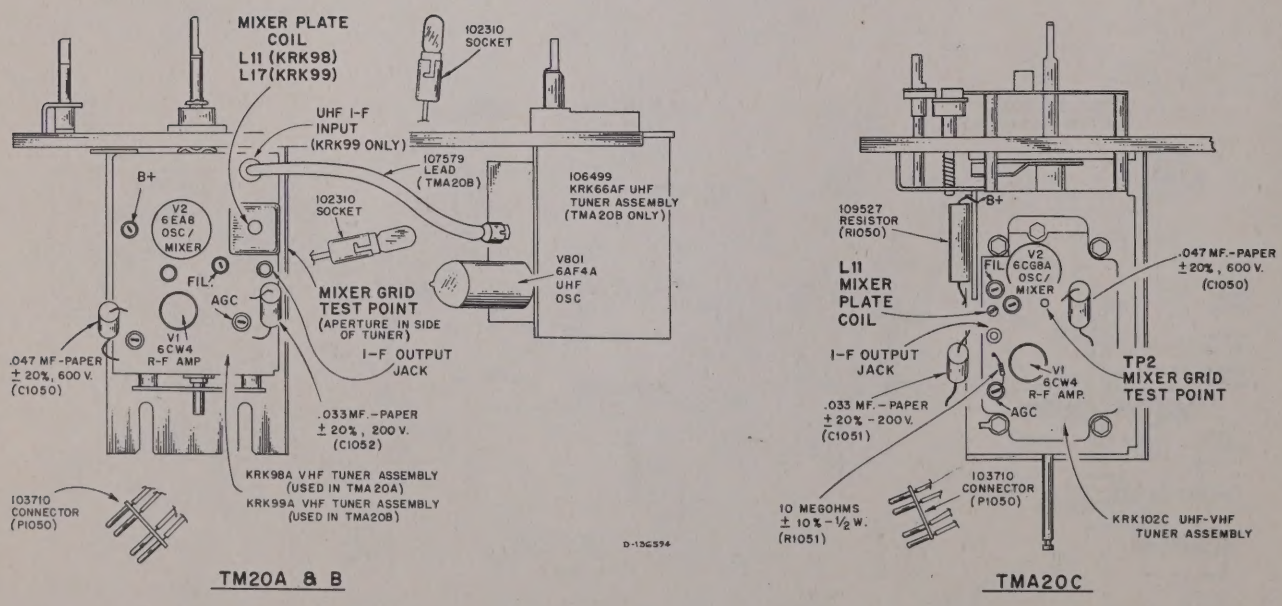


Figure 6—TMA20A, B & C Tuner Mounting Assemblies

KRK99 TUNER SERIES I-F ALIGNMENT

TEST EQUIPMENT CONNECTIONS:

BIAS SUPPLY ..... Apply —2.5 volts bias to AGC terminal on the tuner. Ground the positive lead to the tuner case.

OSCILLOSCOPE ..... Connect a 330 mmf. capacitor and a 180 ohm resistor in series from pin 6 of V2 to ground. Connect the capacitor to pin 6 and the resistor to ground. Connect the oscilloscope to the junction of the resistor and capacitor using the diode probe. (See below.)

SWEEP GENERATOR .... Connect to I-F input jack using the input head shown in Figure 7 of Service Data 1960 No. T6.

SIGNAL GENERATOR ... Couple loosely to oscilloscope diode probe to provide markers.

STEP		SWEEP GENERATOR	SIGNAL GENERATOR	ADJUST	REMARKS
Set channel selector to UHF position 1 between channels 2 and 13.					
1	Adjust I-F input coil	40-50 mc. (I-F)	41.25 mc. 45.75 mc.	L16	L16 for max. gain and response "A". Generator set for 0.5 v. p-p or less on scope.
2	Adjust I-F interstage coil	40-50 mc. (I-F)	41.25 mc. 45.75 mc.	L10	Adjust L10 for response "A" in conjunction with L16 in step 1.
Connect UHF sweep generator to UHF terminals. Couple VHF signal generator to grid of 1st picture I-F amplifier as shown below. Remove input head from J2 and connect the cable from the UHF tuner to J2. Connect the oscilloscope to the 2nd detector output at terminal TP204 using the direct probe. Use 5 volts p-p on oscilloscope.					
3	Retouch I-F interstage coils for overall response	Tune entire UHF range	42.5 mc. 45.0 mc. 45.75 mc.	L16/L10	Retouch for response "B" below.
NOTE:—Adjustment of L16 affects the setting of the VHF oscillators requiring readjustment after L16 is adjusted. L16 should not be touched after final oscillator set-up has been made. Do not retouch any other I-F adjustments.					

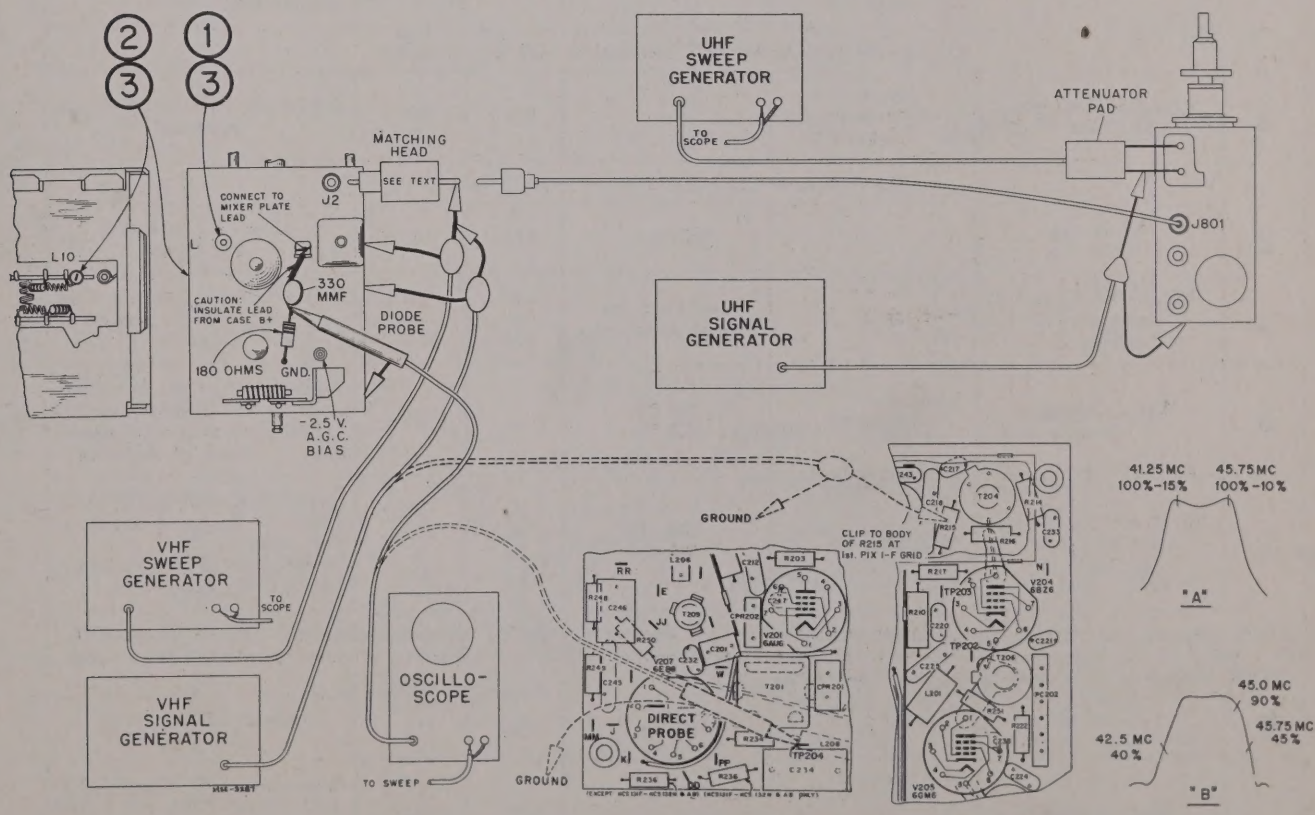


Figure 7—KRK99 Tuner Series I-F Alignment

KRK98 AND KRK99 VHF TUNER SERIES R-F ALIGNMENT

TEST EQUIPMENT CONNECTIONS:

BIAS SUPPLY ..... Apply —2.5 volts to AGC terminal on tuner. Ground positive lead to tuner case.

OSCILLOSCOPE ..... Connect to J1 as shown in Figure 8 using direct probe. Set scope for 1½ to 2 v. peak to peak.

SWEEP GENERATOR ..... Connect to antenna terminals through pad shown in Figure 8 of Service Data 1960 No. T6.

SIGNAL GENERATOR ..... Couple R-F output cable loosely to sweep cable to provide markers. Insert insulated wire into top of Osc./Mixer tube shield. Connect other end to "R-F IN" terminals of generator.

VACUUM TUBE VOLTMETER... Connect to mixer grid at C11 (KRK98) or C12 (KRK99) as shown in Figure 8. (**Note:**—Connect only when checking injection.—Do not have connected during adjustment.)

MISCELLANEOUS ..... Insert head shown in Figure 7 of Service Data 1960 No. T6, into I-F input jack J2. Set fine tuning approximately 170° from counter-clockwise (see Figure 8).

STEP		SWEEP GENERATOR	SIGNAL GENERATOR	ADJUST		REMARKS
				KRK98	KRK99	
Shield must be in place with shutter removed. Channel selector at channel being aligned in each step outlined below.						
1	Preset R-F Plate & Mixer Grid on Chan. 10	Chan. 10	193.25 mc. 197.75 mc.	L5 (Knife) L8 & *C6	L5 (Knife) L11 & *C7	Refer to Figure 8 for adjustment locations and responses. Adjust for approx. correct waveshape as shown in Figure 8. *[If spiked response or oscillation is obtained, adjust C6 (C7) for minimum response and repeat adjustment of L5 & L8 (L11).—Do not adjust bandwidth].
Change the bias at the AGC terminal to —10 to —15 volts.						
2	Adjust neutralization on Chan. 10	Chan. 10 (Maximum Output)	——	C6	C7	Adjust C6 (C7) for minimum response.
Return bias at the AGC terminal to —2.5 volts.						
3	Adjust osc. Chan. 13	——	257 mc.	L10	L15	Adjust for beat with Sig. Gen.
4	Adjust osc. Chan. 12 downward to Chan. 2	——	Osc. Freq. for Chan. involved	L47 to L57	L61 to L51	Adjust for beat with Sig. Gen. From Chan. 12 down to Chan. 2.
5	Adjust Antenna Loop	Chan. 12	205.25 209.75	L4	L4	Adjust position of L4 with respect to L13 (KRK98) or L21 (KRK99) for maximum amplitude at center of response.
6	Adjust R-F Plate-Mixer Grid-Bandwidth on Chan. 12	Chan. 12	205.25 209.75	L5, L8 & L7	L5, L11 & L14	Adjust L5 (Freq.) and L8 (L11) (Tilt) for response shown in Figure 8. Move L7 (L14) with respect to L6 (L13) for bandwidth.
Check tracking and response on all channels from 13 to 7, if necessary, knife R-F plate and mixer-grid loops on channels 10, 9, 8 and 7 for flat response. Turn off generators, check osc. injection (—2.0 to —5.0 volts) on meter, see Note above under VTVM. Replace V2 if outside limits and repeat steps 1 to 6.						
7	Adjust osc. Chan. 6	——	129 mc.	L53	L55	Adjust for beat with Sig. Gen.
8	Adjust Ant.-R-F Plate, Mixer Grid & Bandwidth coils Chan. 6	Chan. 6	83.25 mc. 87.75 mc.	L12, L33, L44 & L45	L6, L7, L9 & L8	Adjust L12 (L6) (Ampl.), L33 (L7) (Freq.) L44 (L9) (Tilt) and L45 with respect to L44 or L8 with respect to L9 (bandwidth) for response in Figure 8. Check for injection within limits.

KRK98 AND KRK99 VHF TUNER SERIES R-F ALIGNMENT

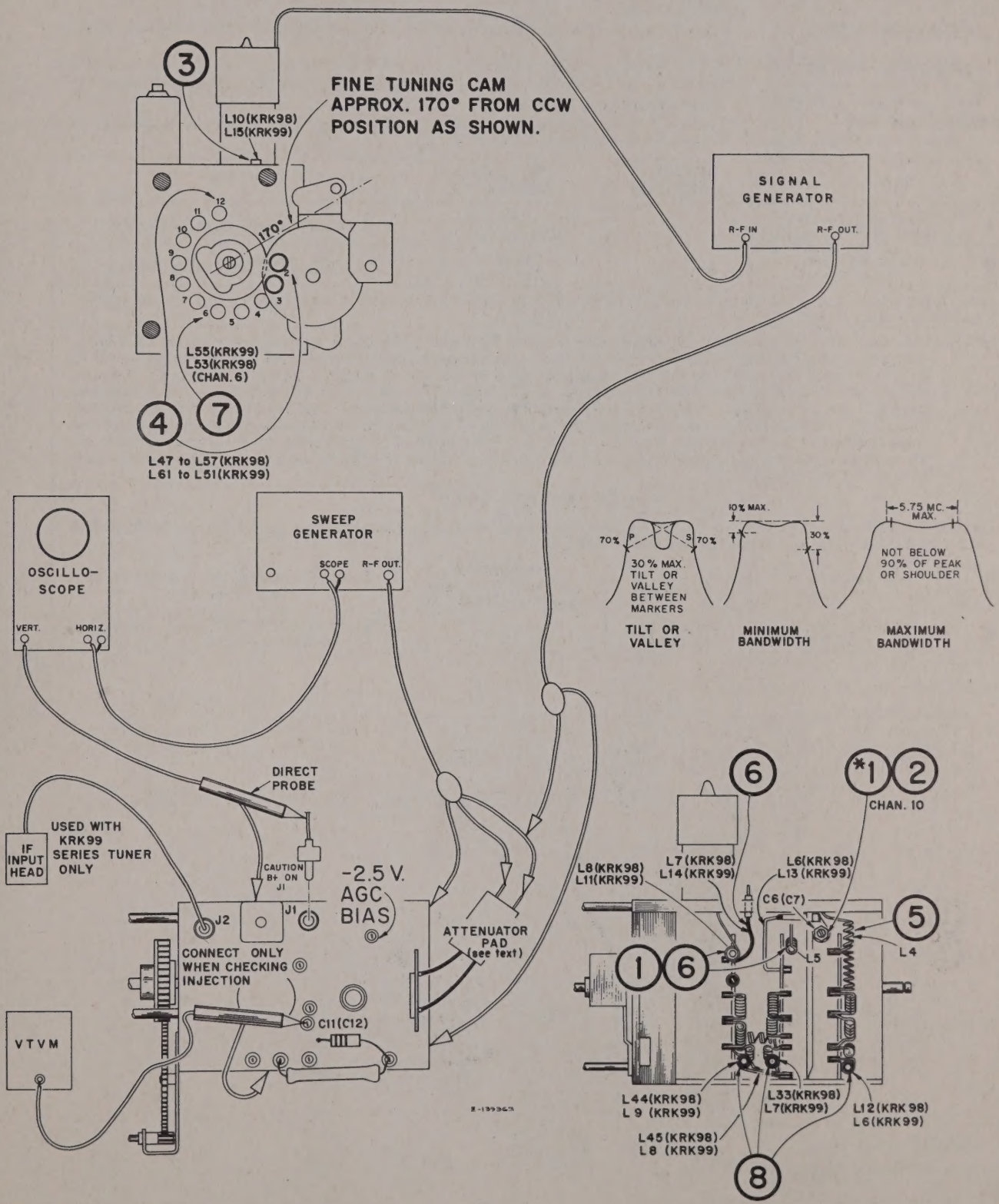


Figure 8—KRK98 and KRK99 VHF Tuner Series R-F Alignment

KRK102 VHF AND UHF/VHF TUNER SERIES R-F ALIGNMENT

TEST EQUIPMENT CONNECTIONS:

BIAS SUPPLY ..... Apply —3.0 volts to tuner AGC terminal. Ground the positive lead to the tuner case.

OSCILLOSCOPE ..... Connect to test point TP1, in series with 10,000 ohm resistor, using direct probe. Set scope to maximum gain.

SWEEP GENERATOR ..... Connect to VHF antenna terminals through pad shown in Figure 8 of Service Data 1960 No. T6.

SIGNAL GENERATOR ..... Couple R-F output cable loosely to sweep cable to provide markers. Insert insulated wire into top of Osc./Mixer tube shield. Connect other end to "RF-IN" terminals of generator.

VACUUM TUBE VOLTMETER ... Connect to test point TP1, see below.

MISCELLANEOUS ..... Connect a 39 ohm composition resistor in series with a 1000 mmf. capacitor across J1. (See below.) Set fine tuning to center of its range.

	STEP	SWEEP GENERATOR	VHF SIGNAL GENERATOR	ADJUST
1	Adjust oscillator on all channels in any order	——	Osc. Freq. for Chan. involved	L8 for beat with signal generator.
2	Adjust R-F Plate/ Mixer Grid	Chan. 10	193.25 mc. 197.75 mc.	*C8 and C12 for response below.
Turn off generators and check oscillator injection at TP1. Voltage should be between 2 and 5 volts, if outside limits replace V2 and repeat steps 1 and 2.				
*NOTE:—Normally steps 1 and 2 are all the adjustments required. However, if the inserts or tuner components have been disturbed, or the R-F amplifier tube is replaced, one or more of the following adjustments may be required.—(1) If tilt is out of limits on a particular channel, adjustment of L5 by knifing will bring the tilt within limits.—(2) If bandwidth is out of limits on most high VHF channels (6-13) knifing L10 will correct this condition.—(3) If improper responses are obtained after replacing the R-F amplifier, it may be necessary to readjust the neutralizing capacitor C21. Apply —10 volts to the tuner AGC terminal. Ground the I-F AGC bus of the television chassis and connect the scope to TP204 at the 2nd detector. Set the scope for .5 volt p-p Adjust C21 (see below) for minimum indication on the scope keeping the output from the sweep generator (Chan. 10) adjusted for no more than .5 volt p-p at the 2nd detector test point TP204.				
UHF INSERTS ONLY				
Connect the UHF sweep generator to the UHF antenna terminals (see below). Connect scope to 2nd detector at TP204. Use —3.0 volts R-F AGC bias and ground the receiver I-F AGC bus.				
3	Adjust oscillator to proper frequency	——	Fundamental osc. freq. (see table page 19 of 1960 No. T6)	Adjust L58 (front of insert) for beat with signal generator.
4	Adjust Ant., Mixer & Harmonic Osc.	Chan. to be received	——	Adjust C51, C52 & C53 for maximum output indication on scope at TP204.

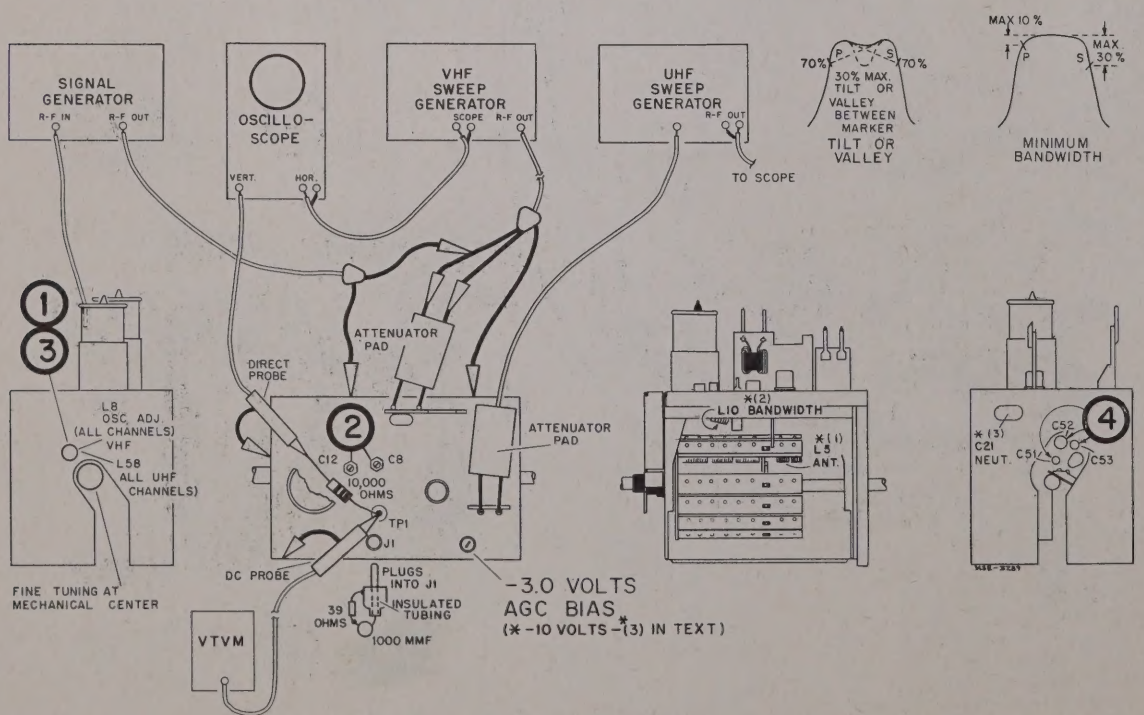


Figure 9—KRK102 VHF & UHF/VHF Tuner Series R-F Alignment

SYMBOL NO.	STOCK NO.	DESCRIPTION
		TMA20A VHF TUNER MOUNTING ASSEMBLY
		(Includes KRK98A VHF Tuner Assembly Listed Below—Refer to Front Page for Cross-Reference Information)
		(Refer to Figure 6)
C1050	———	Capacitor—Paper, .047 mf., ±20%, 600 v.
C1052	———	Capacitor—Paper, .033 mf., ±20%, 200 v.
P1050	103710	Connector—4 contact male power
		KRK98A VHF TUNER ASSEMBLY
		CAPACITORS
C1 to C4	109348	Ceramic—27 mmf., ±5%, 500 v. (Part of ant. match. assy.)
C5	105660	Feed thru, 1000 mmf.
C6	109556	Var. Ceramic—2-10 mmf.
C7	107875	Ceramic—27 mmf., ±10%, 500 v.
C8	———	Ceramic—27 mmf., ±10%, 500 v., N-750
C9	109559	Ceramic—Feed thru, 47 mmf., ±10%, 500 v.
C10	78443	Headed lead, 2.7 mmf., ±10%, 500 v.
C11	109558	Ceramic—Feed thru, 39 mmf., ±10%, 500 v.
C12	105660	Feed thru, 1000 mmf.
C13	———	(Part of S1A)
C14	103556	Ceramic—10 mmf., ±.5 mmf., 500 v.
C15	106240	Ceramic—0.5 mmf., ±.25 mmf., 500 v.
C16	76350	Ceramic—10 mmf., ±.5 mmf., 500 v. (Part of S1A)
C17	107232	Ceramic—39 mmf., ±10%, 500 v.
C18	105660	Feed thru, 1000 mmf.
C19	107594	Ceramic—8 mmf., ±1.0 mmf., 500 v.
C20	105660	Feed thru, 1000 mmf.
C21	77624	Ceramic—680 mmf., +100 —0%, 500 v.
C22	105660	Feed thru, 1000 mmf.
C23	77624	Ceramic—680 mmf., +100 —0%, 500 v.
C24	71502	Headed lead, 2.2 mmf., ±10%, 500 v.
C25	104224	Ceramic—68 mmf., ±10%, 500 v. (Part of S1A)
J1	107588	Connector—Single contact female, I.F. output
L1 to L3	———	(Part of Ant. Match. Network)
L4	———	(Part of S1D)
L5	———	(Part of S1C)
L6, L7	———	(Hi-Band Coupling Adj.)
L8	———	(Part of S1B)
L9	———	Coil—R.F. filter
L10	109345	Form—Coil form and core assy. (Part of S1A)
L11	109374	Coil—Mixer plate
L12, L13	———	(Part of S1D)
L14 to L23	———	(Part of S1D)
L24 to L32	———	(Part of S1C)
L33, L34	———	(Part of S1C)
L35 to L43	———	(Part of S1B)
L44, L45	———	(Low Band Coupling Adj.)
L46	———	(Part of S1B)
L47 to L57	———	(Part of S1A)
L58	———	Coil—Filament
		RESISTORS
		Fixed, Composition—Unless Otherwise Specified:
R1	———	47,000 ohms, ±20%, ½ w.
R2	———	1500 ohms, ±20%, ½ w.
R3	———	4700 ohms, ±20%, ½ w. (Part of S1D)
R4	———	12,000 ohms, ±10%, ½ w. (Part of S1C)
R5	———	100,000 ohms, ±20%, ½ w.
R6	———	3300 ohms, ±20%, ½ w. (Part of S1B)
R7	———	2200 ohms, ±20%, ½ w.
R8	———	5600 ohms, ±10%, ½ w.
R9	———	1000 ohms, ±20%, ½ w.
R10	———	8200 ohms, ±10%, ½ w.
R11	109557	Fixed film, 18,000 ohms, ±10%, 2 w.
R12	106075	Fixed film, 13,000 ohms, ±10%, 4 w.
R14	———	4.7 megohms, ±10%, ½ w.
S1A	109365	Stator—Oscillator complete
S1B	109561	Stator—Mixer complete
S1C	109563	Stator—R.F. complete
S1D	109565	Stator—Antenna complete
		MISCELLANEOUS
	77579	Ball—Detent plate
	106191	Cam—Fine tuning cam assembly
	109103	Detent—Detent plate
	107179	Gear—Diecast fine tuning
	107351	Gear—Phenolic, fine tuning intermediate
	109364	Network—Transformer ant. matching assy.
	109379	Nut—Spring #4-36 (for C6 Capacitor)
	109380	Screw—Mach. fillister head — slotted #4-36 x .75 (for C6 Capacitor)
	109357	Shaft—Detent shaft
	107350	Shaft—Fine tuning shaft and gear
	109555	Socket—Spin nuvistor tube socket for V1
	106044	Socket—Tube 9 pin for V2
	104944	Spring—Cam shaft retaining
	72845	Spring—Fine tuning shaft retaining
	100023	Spring—Stator shield retaining
	76221	Washer—"C" type for fine tuning gear
	204043	Washer—"C" type for retaining fine tuning intermediate gear
	78651	Washer—"C" type for retaining fine tuning shaft
	103522	Washer—Spring, for fine tuning gear
	107459	Washer—Springrip, for fine tuning gear
	107181	Washer—Spring retaining fine tuning intermediate gear
		TMA20B UHF/VHF TUNER MOUNTING ASSEMBLY
		(Includes KRK99A VHF Tuner Assembly and KRK66AF UHF Tuner Assembly Listed Below—Refer to Front Page for Cross-Reference Information)
		(Refer to Figure 6)
C1050	———	Capacitor—Paper, .047 mf., ±20%, 600 v.
C1052	———	Capacitor—Paper, .033 mf., ±20%, 200 v.
P1050	103710	Connector—4 contact male power
S1050	109406	Switch—Rotary pilot lamp switch
	103522	Washer—Spring for fine tuning gear
	107579	Lead—UHF output
	102310	Socket—Pilot lamp socket and lead
		KRK99A VHF TUNER ASSEMBLY
		CAPACITORS
C1 to C4	109348	Ceramic—27 mmf., ±5% ,500 v. (Part of Ant. Match. Assy.)
C5	109560	Ceramic—Feed thru, 39 mmf., ±10%, 500 v.
C6	105660	Feed thru, 1000 mmf.
C7	109377	Var. Ceramic—2-10 mmf.
C8	109559	Ceramic—Feed thru, 47 mmf., ±10%, 500 v.
C9	78443	Headed lead, 2.7 mmf., ±10%, 500 v.
C10, C11	105660	Feed thru, 1000 mmf.
C12	109558	Ceramic—Feed thru, 39 mmf., ±10%, 500 v.
C13	105660	Feed thru, 1000 mmf.
C14	106621	Feed thru, 100 mmf.
C15	76350	Ceramic—10 mmf., ±.5 mmf., 500 v. (Part of S1A)
C16	———	(Part of S1A)
C17, C18	105660	Feed thru, 1000 mmf.
C19	104949	Headed lead, .56 mmf., ±10%, 500 v.
C20	77624	Ceramic—680 mmf., +100 —0%, 500 v.
C21	105660	Feed thru, 1000 mmf.
C22	107594	Ceramic—8 mmf., ±1.0 mmf., 500 v. (Part of S1C)
C23	105781	Ceramic—1.0 mmf., ±.10 mmf., 500 v.
C24	107751	Ceramic—82 mmf., ±5%, 500 v. (Part of S1A)
C25	107232	Ceramic—39 mmf., ±10%, 500 v.
C26	109572	Ceramic—10 mmf., ±10%, 500 v.
C27	77689	Headed lead, .82 mmf., ±10%, 500 v.
C28	102230	Ceramic—470 mmf., ±20%, 500 v.
C29	71500	Headed lead, 1.5 mmf., ±10%, 500 v.
C30	105660	Feed thru, 1000 mmf.
J1	107588	Connector—Single contact female, I.F. output
J2	107588	Connector—Single contact female, UHF, I.F. input
L1 to L3	———	(Part of antenna matching network)
L4	———	(Part of S1D)
L5	———	(Part of S1C)
L6	———	(Part of S1D)
L7	———	(Part of S1C)
L8, L9	———	(Low band coupling adj.)
L10	109346	Form—Coil form and core assembly (Part of S1B)
L11	———	(Part of S1B)
L12	———	Coil—R.F. filter
L13, L14	———	(Hi-Band coupling adj.)
L15	109345	Form—Coil form and core assembly (Part of S1A)
L16	109085	Coil—I.F. interstage
L17	109375	Coil—Mixer plate
L18 to L20	———	Coil—Filament
L21 to L30	———	(Part of S1D)
L31 to L40	———	(Part of S1C)
L41 to L50	———	(Part of S1B)
L51 to L61	———	(Part of S1A)
		RESISTORS
		Fixed, Composition—Unless Otherwise Specified:
R1	———	47,000 ohms, ±20%, ½ w. (Part of S1D)
R2	———	100,000 ohms, ±20%, ½ w.
R3	———	1500 ohms, ±20%, ½ w.
R5	———	12,000 ohms, ±10%, ½ w. (Part of S1C)

KRK102 VHF AND UHF/VHF TUNER SERIES R-F ALIGNMENT

TEST EQUIPMENT CONNECTIONS:

BIAS SUPPLY ..... Apply —3.0 volts to tuner AGC terminal. Ground the positive lead to the tuner case.

OSCILLOSCOPE ..... Connect to test point TP1, in series with 10,000 ohm resistor, using direct probe. Set scope to maximum gain.

SWEEP GENERATOR ..... Connect to VHF antenna terminals through pad shown in Figure 8 of Service Data 1960 No. T6.

SIGNAL GENERATOR ..... Couple R-F output cable loosely to sweep cable to provide markers. Insert insulated wire into top of Osc./Mixer tube shield. Connect other end to "RF-IN" terminals of generator.

VACUUM TUBE VOLTMETER.... Connect to test point TP1, see below.

MISCELLANEOUS ..... Connect a 39 ohm composition resistor in series with a 1000 mmf. capacitor across J1. (See below.) Set fine tuning to center of its range.

	STEP	SWEEP GENERATOR	VHF SIGNAL GENERATOR	ADJUST
1	Adjust oscillator on all channels in any order	——	Osc. Freq. for Chan. involved	L8 for beat with signal generator.
2	Adjust R-F Plate/ Mixer Grid	Chan. 10	193.25 mc. 197.75 mc.	*C8 and C12 for response below.
Turn off generators and check oscillator injection at TP1. Voltage should be between 2 and 5 volts, if outside limits replace V2 and repeat steps 1 and 2.				
*NOTE:—Normally steps 1 and 2 are all the adjustments required. However, if the inserts or tuner components have been disturbed, or the R-F amplifier tube is replaced, one or more of the following adjustments may be required.—(1) If tilt is out of limits on a particular channel, adjustment of L5 by knifing will bring the tilt within limits.—(2) If bandwidth is out of limits on most high VHF channels (6-13) knifing L10 will correct this condition.—(3) If improper responses are obtained after replacing the R-F amplifier, it may be necessary to readjust the neutralizing capacitor C21. Apply —10 volts to the tuner AGC terminal. Ground the I-F AGC bus of the television chassis and connect the scope to TP204 at the 2nd detector. Set the scope for .5 volt p-p Adjust C21 (see below) for minimum indication on the scope keeping the output from the sweep generator (Chan. 10) adjusted for no more than .5 volt p-p at the 2nd detector test point TP204.				
UHF INSERTS ONLY				
Connect the UHF sweep generator to the UHF antenna terminals (see below). Connect scope to 2nd detector at TP204. Use —3.0 volts R-F AGC bias and ground the receiver I-F AGC bus.				
3	Adjust oscillator to proper frequency	——	Fundamental osc. freq. (see table page 19 of 1960 No. T6)	Adjust L58 (front of insert) for beat with signal generator.
4	Adjust Ant., Mixer & Harmonic Osc.	Chan. to be received	——	Adjust C51, C52 & C53 for maximum output indication on scope at TP204.

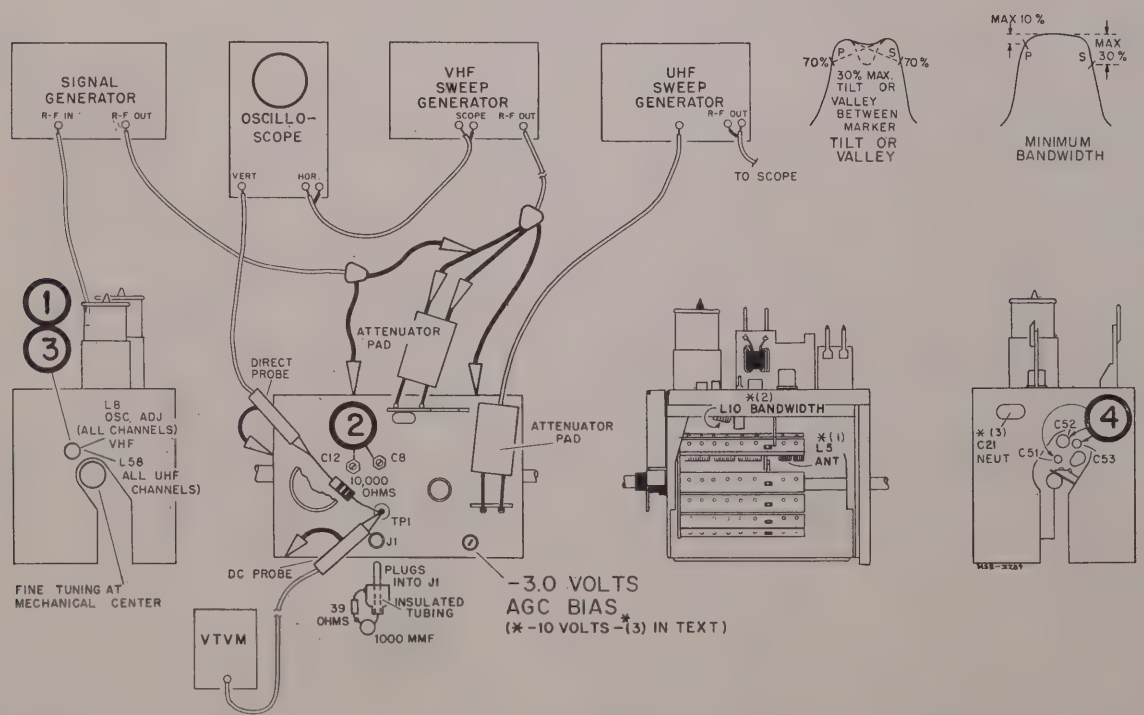
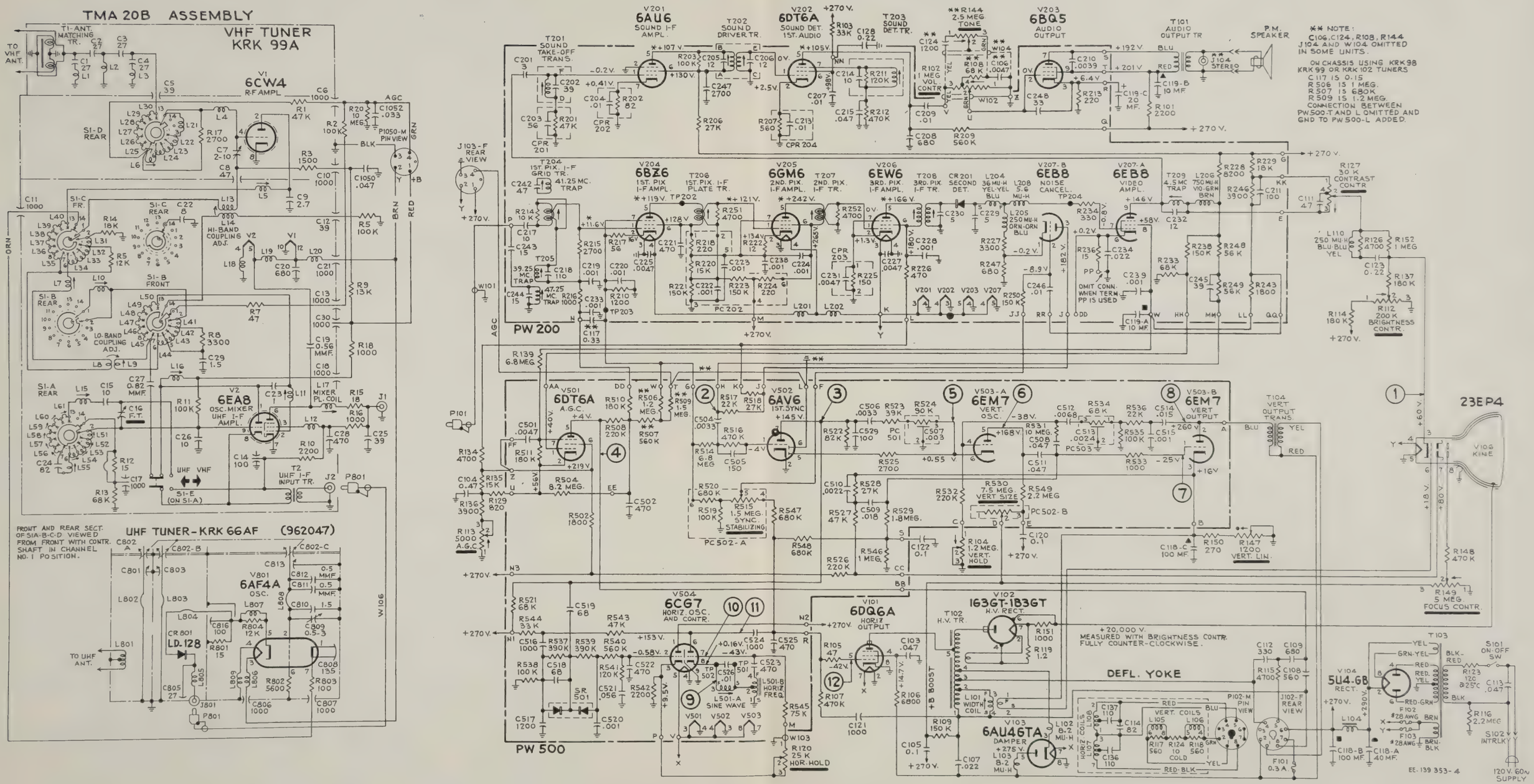


Figure 9—KRK102 VHF & UHF/VHF Tuner Series R-F Alignment

CIRCUIT SCHEMATIC DIAGRAM FOR KCS132ZH, ZJ, ZK, ZL & ZM CHASSIS

(See Figure 3 for KRK98A VHF Tuner used with KCS132ZH Chassis)

(See Figure 2 for KRK102A, B & C Tuners used with KCS132ZK, ZL & ZM Chassis)



All schematics are shown in the latest condition at the time of printing.

All resistance values in ohms. K = 1000.

All capacitance values less than 1 in MF and above 1 in MMF unless otherwise noted.

All voltages measured with "Volt-Ohmyst" and with no signal input. Voltages should hold within ±20% with 120 v, a-c supply.

*Measured with 1 megohm, ½ watt resistor in series with meter probe.

Direction of arrows at controls indicates clockwise rotation.

Figure 10—Circuit Schematic Diagram for KCS132ZH, ZJ, ZK, ZL & ZM Chassis (Shown with KRK99A/66AF UHF/VHF Tuner used with KCS132ZJ Chassis)

SYMBOL NO.	STOCK NO.	DESCRIPTION
R6	———	100,000 ohms, ±20%, ½ w.
R7	———	47 ohms, ±20%, ½ w. (Part of S1B)
R8	———	3300 ohms, ±20%, ½ w. (Part of S1B)
R9	———	Fixed film, 13,000 ohms, ±10%, 4 w.
R10	———	2200 ohms, ±20%, ½ w.
R11	———	100,000 ohms, ±10%, ½ w.
R12	———	15 ohms, ±20%, ½ w .(Part of S1A)
R13	———	68,000 ohms, ±10%, ½ w.
R14	109557	Fixed film, 18,000 ohms, ±10%, 2 w.
R15	———	18 ohms, ±5%, ½ w.
R16	———	1000 ohms, ±20%, ½ w.
R17	———	2700 ohms, ±10%, ½ w. (Part of S1D)
R18	———	1000 ohms, ±20%, ½ w.
R20	———	10 megohms, ±10%, ½ w.
S1A	109567	Stator—Oscillator complete
S1B	109562	Stator—Mixer complete
S1C	109564	Stator—R.F. complete
S1D	109566	Stator—Antenna complete
T2	103668	Coil—I.F. input coil assy., UHF
		MISCELLANEOUS
	77579	Ball—Detent plate
	106191	Cam—Fine tuning cam assembly
	109103	Detent—Detent plate
	109364	Network—Transformer ant. matching assembly
	109379	Nut—Spring #4-36 (Part of C7)
	107179	Gear—Discast fine tuning
	107351	Gear—Phenolic, fine tuning intermediate
	109380	Screw—Mach. fillister head-slotted #4-36 x .75 (Part of C7)
	109357	Shaft—Detent shaft for KRK99A
	107350	Shaft—Fine tuning shaft and gear
	104059	Shield—For mixer plate transformer
	109555	Socket—Nuvistor tube socket for V1
	106044	Socket—Tube, 9 pin for V2
	104944	Spring—Cam shaft retaining
	72845	Spring—Fine tuning shaft retaining
	100023	Spring—Stator shield retaining
	76221	Washer—"C" type for fine tuning gear
	204043	Washer—"C" type for retaining fine tuning intermediate gear
	78651	Washer—"C" type for retaining fine tuning shaft
	103522	Washer—Spring, for fine tuning gear
	107459	Washer—Springrip, for fine tuning gear
	107181	Washer—Spring retaining fine tuning intermediate gear

KRK66AF UHF TUNER ASSEMBLY

Same as original listing in 1960 No. T6

TMA3P VHF TUNER MOUNTING ASSEMBLY

(Includes KRK102B VHF Tuner Assembly Listed Below—Refer to Front Page for Cross-Reference Information)

(Refer to Figure 4)

B1051	107862	Motor—24 v. @ 60 cycle, tuner remote reversible
C1050	———	Capacitor—Paper, .047 mf., ±20%, 600 v.
C1052	———	Capacitor—Paper, .033 mf., ±20%, 200 v.
C1055	106883	Capacitor—Electrolytic, 40 mf., ±20%, 50 v., AC
P1050	103710	Connector—4 contact male, power
P1051	106841	Connector—Remote control cable connector less contacts
R1050	109527	Resistor—Wire wound, 5100 ohms, ±5%, 7 w.
R1051	———	Resistor—Fixed, comp., 10 megohms, ±10%, ½ w.
R1055	———	1000 ohms, ±20%, ½ w.
S1001	109405	Switch—Motor on-off touch bar
S1002	109433	Switch—Channel selector actuating
	109153	Bar—Touch bar
	74734	Clip—Spring clip for dial
	107864A	Coupling—Slip clutch to motor
	109434	Dial—Channel selector, dial blue, plastic
	107866	Gear—Idler
	107865	Gear—Motor drive gear
	107859	Gear—Slip clutch assembly
	106904	Gear—Tuner drive gear
	107873	Gear—Volume control drive
	109146	Pin—Touch bar, pivot pin
	107869	Plunger—Solenoid plunger clutch
	107868	Shaft—Main drive shaft, motor coupled
	107855	Shaft—Slip clutch assembly (TMA3N)
	107867	Shaft—Tuner drive
	107872	Shaft—Volume control drive
	107044	Socket—Channel selector dial lamp
	102310	Socket—Pilot lamp socket and lead
	107550	Solenoid—Clutch
	107871	Spring—Clutch
	73508	Spring—Gear retaining
	107874	Spring—Retaining for gears
	109147	Spring—Touch bar spring
	107870	Stud—Gear mounting
	107857	Washer—Slip clutch assembly
	107858	Washer—Slip clutch assembly
	107860	Washer—Spring type for slip clutch assembly

TMA15B TUNER MOUNTING ASSEMBLY

(Includes KRK102A VHF Tuner Assembly Listed Below—Refer to Front Page for Cross-Reference Information)

(Refer to Figure 5)

B1001	109404	Motor—115 v., 60 CPS
C1050	———	Capacitor—Paper, .047 mf., ±20%, 600 v.
C1052	———	Capacitor—Paper, .033 mf., ±20%, 200 v.
P1050	103710	Connector—4 contact male, power
P1051	109440	Connector—4 contact male, motor
R1050	109527	Resistor—Fixed wirewound, 5100 ohms, ±5%, 7 w.
R1051	———	Resistor—Fixed, composition, 10 megohms, ±10%, ½ w.
S1001	109217	Switch—Off-on pneumatic master switch bellows and support assembly
S1002	109413	Switch—Channel selector actuating
S1003	109405	Switch—Motor on-off touch bar
	109153	Bar—Remote motor touch bar
	109403	Cam—Bellows actuating cam
	109402	Dial—Channel selector dial, clear acetate
	109146	Pin—Touch bar pivot
	107044	Socket—Pilot lamp socket
	74734	Spring—Cam and dial retaining spring clip
	109147	Spring—Touch bar torsion
	204043	Washer—"C" washer retaining cam

TMA20C UHF/VHF TUNER MOUNTING ASSEMBLY

(Includes KRK102C UHF/VHF Tuner Assembly Listed Below—Refer to Front Page for Cross-Reference Information)

(Refer to Figure 5)

C1050	———	Capacitor—Paper, .047 mf., ±20%, 600 v.
C1052	———	Capacitor—Paper, .033 mf., ±20%, 200 v.
P1050	103710	Connector—4 contact male, power
R1050	109527	Resistor—Fixed wirewound, 5100 ohms, ±5%, 7 w.
R1051	———	Resistor—Fixed comp., 10 megohms, ±10%, ½ w.

KRK102A, B & C VHF AND UHF/VHF TUNER ASSEMBLIES

CAPACITORS

C1 to C4	———	(Part of UHF Network)
C7	109594	Ceramic—20 mmf., ±5%, 500 v.
C8	109598	Variable ceramic—1.8-7.0 mmf.
C9	109617	Ceramic—1.8-7 mmf. fixed section 47 mmf.
C10	———	Ceramic—1000 mmf., GMV, 500 v.
C11	109596	Feed thru—33 mmf.
C12	109218	Variable ceramic—.5-3. mmf.
C13	———	Ceramic—1000 mmf., GMV, 500 v.
C14	109424	Ceramic—7.25 mmf., +.5-.25 mmf., N80
C15	107884	Ceramic—18 mmf., ±10%, 500 v., N220
C16	———	Ceramic—39 mmf., ±5%, 500 v., N750
C17	109595	Feed thru—1000 mmf., GMV
C18	107881	Feed thru—40 mmf.
C19, C20	107878	Feed thru—1000 mmf., GMV
C21	109617	Ceramic—1.8-7 mmf., fixed section 47 mmf.
C22	107876	Feed thru—30 mmf., ±7½%, 750 v.
C23 to C26	———	Ceramic—27 mmf., ±10%, N750, 500v. (Part of T1)
C27	107878	Feed thru—1000 mmf., GMV
C28	109425	Headed lead—.75 mmf., ±10%, 500 v.
L5 to L8	———	(Part of Channel strips)
L9	107888	Coil—Fine tuning coil less core
L10	———	Coil—Screen grid
L11	109619	Coil—I.F.
L12	———	Coil—Pt. of T1
L13	———	Coil—Pt. of T1
L14	———	Coil—Pt. of T1

SYMBOL NO.	STOCK NO.	DESCRIPTION
		RESISTORS
		Fixed composition, ½ watt, except as noted:
R3	———	47,000 ohms, ±20%, ½ w.
R4	———	2200 ohms, ±10%, ¼ w.
R5	———	3900 ohms, ±10%, ½ w.
R6	———	220,000 ohms, ±20%, ¼ w.
R7	———	4700 ohms, ±20%, ½ w.
R9	———	1000 ohms, ±20%, ½ w.
R10	107894	4700 ohms, ±20%, ¼ w.
T1	109615	Network—VHF antenna input assembly
		MISCELLANEOUS
	107897	Ball—Detent
	109614	Board—Stator board & mounting bracket assembly
	107911	Bracket—Fine tuning coil mounting
	109155	Cam—Selector cam (nylon)
	107918	Core—Channel strip tuning core
	109468	Core—Fine tuning coil and grommet
	109613	Detent—Channel selector detent complete (for KRK102A)
	109612	Detent—Channel selector detent complete (for KRK102B)
	109466	Detent—Channel selector detent complete (for KRK102C)
	107799	Gear—Fine tuning shaft drive gear (for KRK102A & B)
	107797	Gear—Fine tuning drive gear less spring (for KRK102C)
	107351	Gear—Fine tuning intermediate drive gear (for KRK102C)
	109426	Hub—Selector hub (for KRK102A, B)
	109599	Insert—Channel No. 2
	109600	Insert—Channel No. 3
	109601	Insert—Channel No. 4
	109602	Insert—Channel No. 5
	109603	Insert—Channel No. 6
	109604	Insert—Channel No. 7
	109605	Insert—Channel No. 8
	109606	Insert—Channel No. 9
	109607	Insert—Channel No. 10
	109608	Insert—Channel No. 11
	109609	Insert—Channel No. 12
	109610	Insert—Channel No. 13
	109460	Lever—Fine tuning lever
	109290	Network—UHF antenna input assembly
	107915	Retainer—Detent shaft
	109427	Shaft—Fine tuning shaft and gear (for KRK102A & B)
	109618	Shaft—Fine tuning cam shaft assembly (for KRK102C)
	107350	Shaft—Fine tuning shaft and gear assembly (for KRK102C)
	109597	Socket—R.F. tube
	109616	Socket—Oscillator mixer tube
	109461	Spring—Channel selector detent shaft front retaining
	109576	Spring—Channel selector detent shaft rear retaining
	72845	Spring—Fine tuning drive gear retaining (for KRK102C)
	109462	Spring—Fine tuning lever tension
	107969	Spring—Tension for fine tuning intermediate gear (for KRK102A & B)
	109373	Stud—Adjusting stud (for KRK102A, B)
	109413	Switch—Channel selector actuating (for KRK102A)
	109433	Switch—Channel selector actuating (for KRK102B)
	109590	Tuner—R.F. tuning unit assembly VHF insert tuner KRK102A
	109592	Tuner—R.F. tuning unit assembly VHF insert tuner KRK102B
	109593	Tuner—R.F. tuning unit assembly VHF/UHF insert tuner KRK102C
	77269	Washer—"C" washer for fine tuning shaft (for KRK102C)
	204043	Washer—"C" washer for retaining intermediate gear (for KRK102C)
	107916	Washer—Spring type for fine tuning cam
	107459	Washer—Springgrip lockwasher for fine tuning drive gear tension (for KRK102A, B, C)
	107181	Washer—Spring for fine tuning intermediate drive gear (for KRK102C)

KRT1B REMOTE CONTROL TRANSMITTER (2 Button)

Same as original listing in 1960 No. T6

KRS24C REMOTE CONTROL AMPLIFIER (2 Button)

Same as original listing in 1960 No. T6

CRK3E REMOTE CONTROL TRANSMITTER (3 Button)

Same as original listing in 1960 No. T6

SYMBOL NO.	STOCK NO.	DESCRIPTION
		CTP9B REMOTE CONTROL AMPLIFIER (3 Button)
		Same as original listing in 1960 No. T6
		KCS132ZH, ZJ, ZK, ZL & ZM CHASSIS ASSEMBLIES
		Same as original listing in 1960 No. T6 except change the following items to read:
C108	———	Ceramic—560 mmf., ±10%, 1000 v.
C112	———	Ceramic—330 mmf., ±10%, 2000 v.
C123	109410	Paper—0.22 mf., ±20%, 600 v.
C247	104131	Ceramic—2700 mmf., ±10%, 500 v. (KCS-132)
L110	109289	Coil—Peaking 250 UH
R106	———	6800 ohms, ±10%, 3 w.
R116	———	2.2 megohms, ±20%, ½ w.
R117, R118	———	150 ohms, ±10%, ½ w.
R124	107464	Temp. compensating 12.92 ohms, cold ±20% (Part of yoke)
R136	109241	3900 ohms, ±10%, 1 w.
R206	———	27,000 ohms, ±10%, 2 w.
R215	———	2700 ohms, ±10%, ½ w.
R529	———	1.8 megohms, ±10%, ½ w. (KCS132)
		Add the following items:
		CAPACITORS
C117	———	Paper—.15 mf., ±20%, 200 v. (KCS132ZH, ZJ, ZK, ZL, ZM)
C124	104384	Ceramic—1200 mmf., ±10%, 500 v. (KCS-132ZH, ZJ, ZK, ZL, ZM)
C128	———	Paper—0.22 mf., ±20%, 400 v.
C135, C137	107679	Ceramic—110 mmf., ±20%, 1500 v. (Part of yoke)
C209	73960	Ceramic—.01 mf., 500 v. (KCS132)
C210	109060	Ceramic—3900 mmf., ±10%, 1000 v. (KCS-132)
C217	———	Ceramic disc.—10 mmf., ±5%, 500 v., NPO (KCS132)
C218	109438	Ceramic—110 mmf., ±5%, 500 v. (KCS132)
C242	———	(Part of T204)
C248	109327	Ceramic—33 mmf., ±10%, 500 v. (KCS132)
C508	———	Paper—.0047 mf., ±10%, 200 v. (KCS132)
PW200	109313	Circuit—Printed video circuit less tubes (KCS132ZH, ZJ, ZK, ZM)
PW200	109314	Circuit—Printed video circuit less tubes (KCS132ZL)
PW500	109582	Circuit—Printed deflection circuit less tubes (KCS132ZH, ZJ, ZK, ZL & ZM)
		RESISTORS
		Fixed, Composition—Unless Otherwise Specified:
R102	107334	Control—On-off-volume (KCS132ZH, ZJ, ZK)
R102	109306	Control—On-off-volume (KCS132ZL)
R102	107616	Control—On-off-volume (KCS132ZM)
R104	109387	Control—Vertical hold (KCS132ZM)
R104	109388	Control—Vertical hold (KCS132ZH, ZJ, ZK, ZL)
R108	———	68,000 ohms, ±10%, ½ w. (KCS132ZH, ZJ, ZK, ZL, ZM)
R114	———	180,000 ohms, ±10%, ½ w. (Except KCS-132ZL)
R114	———	390,000 ohms, ±10%, ½ w. (KCS132ZL only)
R120	107627	Control—Horizontal hold (KCS132ZM)
R120	109386	Control—Horizontal hold (KCS132ZH, ZJ, ZK, ZL)
R139	———	6.8 megohms, ±10%, ½ w.
R144	109307	Control—Tone (KCS132ZH, ZJ, ZK)
R144	107841	Control—Tone (KCS132ZM)
R160	———	120,000 ohms, ±10%, ½ w. for KCS132ZL
R506	———	1.0 megohm, ±10%, ½ w. (KCS132ZH, ZJ, ZK, ZL & ZM)
R507	———	680,000 ohms, ±10%, ½ w. (KCS132ZH, ZJ, ZK, ZL & ZM)
R509	———	1.2 megohms, ±10%, ½ w. (KCS132ZH, ZJ, ZK, ZL & ZM)
S104	107774	Switch—TV on-off (KCS132ZM)
T101	109299	Transformer—Audio output (KCS132ZH, ZJ, ZK, ZL, ZM)
		MISCELLANEOUS
		Use listing below in place of original listing in 1960 No. T6
	109497	Back—Cabinet for 231BE625-6-7-U & SU, 231BER625-6-7
	109552	Back—Cabinet for 231HR776, 788, 789, 797, 799
	109391	Bumper—Kine mounting strap (rubber)
	Z4801	Cabinet—Mahogany, for 231BE625-U & SU, 231BER625
	Z4802	Cabinet—Walnut, for 231BE626 & U, 231-BER626

SYMBOL NO.	STOCK NO.	DESCRIPTION
	Z4803	Cabinet—Oak, for 231BE627 & U, 231BER-627
	105002	Cable—Power cable and plug
	109064	Can—Coil can (Part of PW200)
	102847	Capacitor—For 102119, 231HR776, 231HR-788 & 9, 231HR797 & 9
	104409	Clamp—Used with 107192
	107329	Clip—High voltage shield assembly
	109138	Clip—Power cord retaining
	100029	Connector—Power input 2 contact male
	109430	Dial—Knob, 13 position, used with 109429
	109431	Dial—Knob, 14 positions, used with 109428
	109187	Escutcheon—Cabinet panel remote control for 231BER625-6-7
	107631	Escutcheon—Microphone, all remote control models except 231HR776, 231HR788-9, 231HR797-9
	109453	Escutcheon—Microphone, for 231HR776, 231HR788-9, 231HR797-9 only
	107467	Foot—Cabinet mounting
	107633	Grille—Cabinet, remote, microphone for 231-HR776, 231HR788 & 9, 231HR797 & 9
	107335	Grommet—High voltage shield
	71851	Grommet—Microphone mounting, 231BER-625-6-7
	104524	Holder—Fuse F101
	109211	Holder—Remote control transmitter mounting (phenolic) for 231BER625-6-7
	109283	Holder—Transmitter cradle for 231HR776, 231HR788 & 9, 231HR797 & 9
	102751	Housing—Speaker housing for 102119, for 231HR776, 231HR788 & 9, 231HR797 & 9
	107328	Insulator—High voltage tube socket
	109192	Knob—Channel selector and dial assembly, black, for 231HR776, 231HR788 & 9, 231-797 & 9
	107265	Knob—Control tone, clear, for 231HR776, 231HR788 & 9, 231HR797 & 9
	109546	Knob—Dial UHF selector, gray, for 231BE-626U-7U
	109545	Knob—Dial UHF selector, wine, for 231BE-625U
	107263	Knob—Fine tuning, clear, for 231HR776, 231-HR788 & 9, 231HR797 & 9
	109189	Knob—Fine tuning, zinc diecast, for 231BER-625-6-7
	107264	Knob—On-off volume contrast or tone, clear, for 231HR776, 231HR788 & 9, 231HR797 & 9
	107266	Knob—Dial UHF channel selector, clear, for 231HR776, 231HR788 & 9, 231HR797 & 9
	104071	Knob—Selector UHF, wine, for 231BE625U
	107269	Knob—UHF selector control, clear, for 231-HR776, 231HR788 & 9, 231HR797 & 9
	104072	Knob—UHF selector, mocha, for 231BE627U
	107621	Knob—UHF selector, woodland brown, for 231BE626U
	109429	Knob—VHF channel selector, 13 position, 231BE625SU
	109428	Knob—VHF channel selector, 14 position, for 231BE625-6-7 & U
	109130	Knob—VHF control for 231BE625-6-7-U & SU
	109130	Knob—Volume, contrast, aux. and offset control for 231BE625-6-7-U & SU, 231BER625-6-7
	107046	Lamp—Pilot lamp for 231BER625-6-7
	103211	Lamp—Pilot lamp, mazda #1847, for 231-BE625-6-7 & U
	102932	Lead—Anode connector and lead
	107617	Lever—T.V. on-off switch for KCS132ZM
	107192	Magnet—Centering
	109550	Mask—Kine mask assembly for 231HR776, 231HR788 & 9, 231HR797 & 9
	109492	Mask—Kine mask assembly for 231BE625-6-7-U & SU
	109493	Mask—Kine mask assembly for 231BER625-6-7
	107850	Microphone—Transducer receiver for 231-BER625-6-7
	107850	Microphone—Transducer receiver for 231-HR776, 231HR788 & 9, 231HR797 & 9
	109549	Motif—New Vista
	109161	Nameplate—"RCA Victor"
	109161	Nameplate—Assembly
	107954	Nut—"J" nut for kine mounting strap
	77013	Nut—For 109549
	109544	Shaft—Contrast control connector for 231-BE625-6-7-U & SU, 231BER625-6-7
	109548	Shaft—Contrast control connector for 231-HR776, 231HR788 & 9, 231HR797 & 9
	109044	Socket—Kine
	109317	Socket—Octal for V503
	102787	Socket—Tube for V101, V103
	31251	Socket—Tube for V104
	107207	Socket—Tube for V203, V207, V504
	105780	Socket—Tube for V202, V204
	109037	Socket—Tube for V201, V205, V206
	105313	Socket—Tube for V501
	109533	Socket—Tube for V502
	107324	Socket—Tube for V102, high voltage
	107645	Socket—Lead assembly for 231HR776, 231-89788 & 9, 231HR797 & 9
	102119	Speaker—3.5", 9 ohms, for 231HR776, 231-788 & 9, 231HR797 & 9
	107474	Speaker—4" PM, 3.2 ohms, for 231BE625-6-7-U & SU, 231BER625-6-7
	107304	Speaker—6" x 9", 3.2 ohms, for 231HR797 & 9
	107475	Speaker—8", 3.2 ohms, for 231HR776, 231-HR788 & 9
	78324	Spring—Back cover assembly
	107953	Spring—Kine mounting strap tension
	76837	Spring—Retaining used with 109428, 104071, 109429, 107621, 104072, 107269
	107793	Spring—Retaining used with 107261, 107264, 107265
	100584	Spring—Retaining used with 107260
	109132	Spring—Retaining used with 109130, 109189
	106950	Spring—Retaining used with 109546, 109545
	107955	Strap—Kine mounting
	104068	Terminal—Cabinet back, antenna
	107022A	Yoke—Deflection 110°

RCA VICTOR

SUPPLEMENT
TO
TELEVISION SERVICE DATA
1960 No. T5

This Service Data supplements RCA Victor Service Data 1960 No. T5, adding the models shown below to those covered in 1960 No. T5.

These models are "21 inch" color television receivers with full 12 channel VHF coverage. Model 211-CB-812U also provides coverage of all UHF channels. Model 211-CHR-976 features use of a new high-gain low-noise tuner employing a nuvister R-F amplifier.

Model 211-CHR-976 incorporates remote control of the "ON", "OFF", "VOLUME", "COLOR", "TINT" and "CHANNEL" functions of the receiver. A 7-button "wireless" type hand control unit is used for remote control of the receiver.

PREPARED BY COMMERCIAL SERVICE
RCA SERVICE COMPANY
A DIVISION OF
RADIO CORPORATION OF AMERICA
CAMDEN 8, N. J.

COLOR TELEVISION SERVICE DATA

— 1960 No. T5-S2 —

FOR

CTC10 CHASSIS SERIES

MODEL AND CHASSIS REFERENCE

MODEL NO.	CABINET STYLE	FINISH	CHASSIS	TUNER	REMOTE CHASSIS	KINESCOPE
211-CB-812	Table	Black	CTC10T	KRK96T	——	21CYP22A
211-CB-812U	Table	Black	CTC10U	KRK97T KRK66AA	——	21CYP22A
211-CHR-976	Console	Walnut	CTC10W	KRK98C	CTP7B CRK3F	21CYP22A

REFER TO SERVICE DATA 1960 No. T5 FOR COMPLETE SERVICE INFORMATION COVERING INSTALLATION, SET-UP AND ALIGNMENT OF THESE RECEIVERS. THE MODELS LISTED ABOVE ARE IDENTICAL TO RECEIVERS COVERED IN 1960 No. T5, EXCEPT FOR THE TUNER EMPLOYED IN MODEL 211-CHR-976, AND AS INDICATED IN THIS PUBLICATION.

THE NUVISTOR TELEVISION TUNER

The KRK98C VHF tuner used in model 211-CHR-976 is a new design that is referred to as the RCA "NEW VISTA" tuner. The KRK98C tuner uses a new electron tube type called a Nuvistor. The RCA type 6CW4 Nuvistor used in the R-F amplifier circuit of the new tuner is representative of a new development in receiving tube design. Figure 1 shows its remarkably small size —approximately ¾" long and less than ½" in diameter. Although the Nuvistor is small in size, it is big in performance. The RCA 6CW4 Nuvistor tube combined with the especially designed circuitry of the KRK98C produces a television tuner of superior performance.

The outstanding characteristics of the Nuvistor electron tube are due mainly to the method of manufacture, small size and the materials employed. The metal and ceramic materials used in the fabrication of this new tube result in extremely rugged construction. As shown in Figure 1, the cylindrical electrodes are supported on short, tripod-like structures fastened to a ceramic wafer which serves as a support and a part of the tube envelope. This unique cylindrical construction permits all but two of the tube parts to be assembled on a simple jig. This method of manufacture makes it easier to control the dimensions between the close-spaced elements. Close tolerances are thus maintained assuring uniform quality and uniform tube characteristics. The small size of the tube elements results in improved cathode efficiency and high-frequency performance.

The rugged design, precise assembly, and controlled processing of the Nuvistor tube minimize or eliminate most of the known causes of tube failure experienced on life tests. Intermittents due to poor welds are eliminated by a brazing process instead of welding. Gas and impurities have been reduced to a minimum by the vacuum process at exceptionally high temperatures.

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The base of the new tube is constructed with two indexing lugs. The indexing lugs are slightly longer than the tube pins and not only serve to shield and protect the tube pins during insertion of the tube but also permit safe, easy and rapid insertion. The socket connection arrangement and numbering system are shown in Figure 1.

In addition to the benefits derived from assembly and processing, the small size design feature of the Nuvistor triode makes it possible to produce a television tuner with exceptional performance. The small size and close spacing of the Nuvistor triode elements make it possible to design a VHF R-F amplifier with outstanding low "noise" capabilities and high sensitivity. The low noise feature refers to the low thermal noise of the 6CW4 Nuvistor which is very important to good television reception in weak signal areas.

The superior performance of the KRK98C tuner is due mainly to the neutralized triode R-F amplifier circuit designed around the 6CW4 Nuvistor tube. The mixer/oscillator portion of the tuner uses a 6EA8 tube in a circuit of proven reliability. In this circuit the triode section is "stacked" on the pentode section i.e. the cathode of the oscillator section supplies the screen and plate voltages for the mixer section.

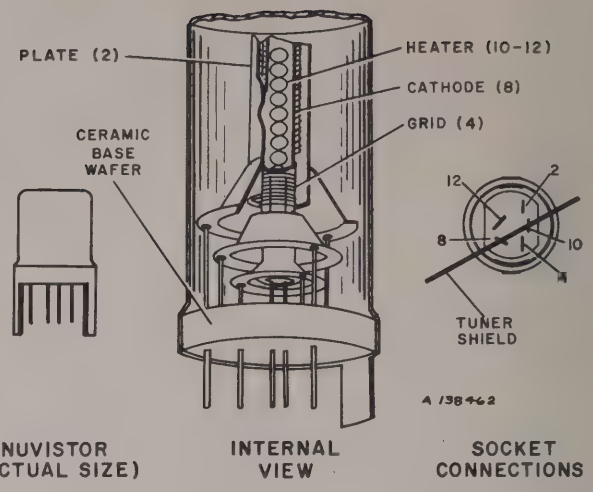

Figure 1—6CW4 Nuvistor Tube and Socket Details

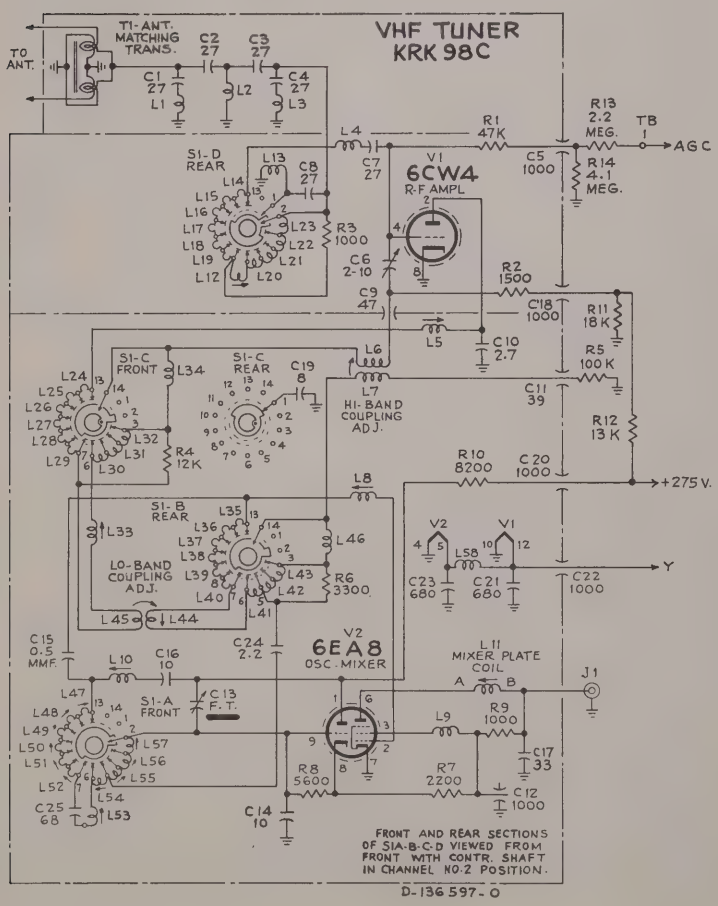

Figure 2 — KRK98C VHF Tuner Circuit Schematic Diagram for CTC10W Chassis

NOTE: The CTC10W chassis referred to above is identical to chassis shown in the large schematic, Figure 43 of Service Data 1960 No. T5 except for the tuner, which is shown in schematic at the left.

KRK98C VHF TUNER R-F ALIGNMENT

Refer to Service Data Supplement 1960 No. T6-S3 pages 6 and 7 for R-F alignment for the KRK98C tuner

SYMBOL NO.	STOCK NO.	DESCRIPTION
		KRK96T VHF TUNER ASSEMBLY
		Same as original listing in 1960 No. T5 for KRK96E, F & H Tuners except change the following miscellaneous items to read:
	109103	Detent—Detent plate (For KRK96E, F & T)
	106266	Lever—Detent, steel (For KRK96E, F & T)
	107618	Shaft—Detent shaft assembly (For KRK96E, F & T)
		KRK97T VHF TUNER ASSEMBLY
		Same as original listing in 1960 No. T5 for KRK97E, F & H Tuners except change the following items to read:
	109103	Detent—Detent plate (For KRK97E, F & T)
	106266	Lever—Detent, steel (For KRK97E, F & T)
	107618	Shaft—Detent shaft assembly (For KRK97E, F & T)
	106264	Shaft—Fine tuning shaft (For KRK97E, F & T)
		Add the following item:
R20	———	470 ohms, ±10%, ½ w.
		KRK66AA UHF TUNER ASSEMBLY
		Same as original listing in 1960 No. T5
		KRK98C VHF TUNER ASSEMBLY
		CAPACITORS
C1 to C4	109348	Ceramic—27 mmf., ±5%, 500 v. (Part of ant. match. assy.)
C5	105660	Feed thru, 1000 mmf.
C6	109556	Var. Ceramic—2-10 mmf.
C7	107875	Ceramic—27 mmf., ±10%, 500 v.
C8	———	Ceramic—27 mmf., ±10%, 500 v., N-750
C9	109559	Ceramic—Feed thru, 47 mmf., ±10%, 500 v.
C10	78443	Headed lead, 2.7 mmf., ±10%, 500 v.
C11	109558	Ceramic—Feed thru, 39 mmf., ±10%, 500 v.
C12	105660	Feed thru, 1000 mmf.
C13	———	(Part of S1A)
C14	103556	Ceramic—10 mmf., ±.5 mmf., 500 v.
C15	106240	Ceramic—0.5 mmf., ±.25 mmf., 500 v.
C16	76350	Ceramic—10 mmf., ±.5 mmf., 500 v. (Part of S1A) (for KRK98A, B, C)
C17	———	Ceramic—33 mmf., ±5%, 500 v. (for KRK-98C)
C18	105660	Feed thru, 1000 mmf.
C19	107594	Ceramic—8 mmf., ±1.0 mmf., 500 v.
C20	105660	Feed thru, 1000 mmf.
C21	77624	Ceramic—680 mmf., +100 —0%, 500 v.
C22	105660	Feed thru, 1000 mmf.
C23	77624	Ceramic—680 mmf., +100 —0%, 500 v.
C25	104224	Ceramic—68 mmf., ±10%, 500 v. (Part of S1A)
J1	107588	Connector—Single contact female, I.F. output
L1 to L3	———	(Part of Ant. Match. Network)
L4	———	(Part of S1D)
L5	———	(Part of S1C)
L6, L7	———	(Hi-Band Coupling Adj.)
L8	———	(Part of S1B)
L9	———	Coil—R.F. filter
L10	109345	Form—Coil form and core assy. (Part of S1A)
L11	107966	Coil—Mixer plate (for KRK98C)
L12, L13	———	(Part of S1D)
L14 to L23	———	(Part of S1D)
L24 to L32	———	(Part of S1C)
L33, L34	———	(Part of S1C)
L35 to L43	———	(Part of S1B)
L44, L45	———	(Low Band Coupling Adj.)
L46	———	(Part of S1B)
L47 to L57	———	(Part of S1A)
L58	———	Coil—Filament
		RESISTORS
		Fixed, Composition—Unless Otherwise Specified:
R1	———	47,000 ohms, ±20%, ½ w.
R2	———	1500 ohms, ±20%, ½ w.
R3	———	4700 ohms, ±20%, ½ w. (Part of S1D)
R4	———	12,000 ohms, ±10%, ½ w. (Part of S1C)
R5	———	100,000 ohms, ±20%, ½ w.
R6	———	3300 ohms, ±20%, ½ w. (Part of S1B)
R7	———	2200 ohms, ±20%, ½ w.
R8	———	5600 ohms, ±10%, ½ w.
R9	———	1000 ohms, ±20%, ½ w.
R10	———	8200 ohms, ±10%, ½ w.
R11	109557	Fixed film, 18,000 ohms, ±10%, 2 w.
R12	106075	Fixed film, 13,000 ohms, ±10%, 4 w.
R13	———	2.2 megohms, ±10%, ½ w.
S1A	109367	Stator—Oscillator complete
S1B	109561	Stator—Mixer complete
S1C	109563	Stator—R.F. complete
S1D	109565	Stator—Antenna complete
		MISCELLANEOUS
	109155	Cam—Channel selector
	107453	Gear—Fine tuning intermediate
	106261	Gear—Turret, fine tuning, even numbers
	106262	Gear—Turret, fine tuning, odd numbers
	109371	Hub—Channel selector hub
	106265	Lever—Fine tuning phenolic
	106491	Lever—Switch operating
	109364	Network—Transformer ant. matching assy.
	109379	Nut—Spring #4-36 (for C6 Capacitor)
	109344	Plate—Detent
	109380	Screw—Mach. fillister head—slotted #4-36 x .75 (for C6 Capacitor)
	70527	Screw—Set screw for turret
	109356	Shaft—Detent shaft assembly
	109376	Shaft—Fine tuning shaft
	109555	Socket—Spin nuvistor tube socket for V1
	106044	Socket—Tube, 9 pin for V2
	104944	Spring—Cam shaft retaining
	107460	Spring—Fox fine tuning lever
	100023	Spring—Stator shield retaining
	107969	Spring—Tension for intermediate fine tuning gear
	107362	Spring—Tension spring for detent lever
	109373	Stud—Adjusting stud for switch
	109354	Switch—Channel selecting
	109347	Turret—Fine tuning turret
	78652	Washer—"C" type for detent lever
	76221	Washer—"C" type for fine tuning gear
	78651	Washer—"C" type for retaining fine tuning shaft
	107450	Washer—Spring detent lever
	107451	Washer—Spring, fine tuning lever retaining
	107459	Washer—Springrip for fine tuning gear
	107449	Washer—Spring turret tension
	107924	Wire—Formed turret gear retaining
		REMOTE CONTROL TUNER AND CLUTCH ASSEMBLY
		Same as original listing in 1960 No. T5
		CTP7B REMOTE CONTROL AMPLIFIER ASSEMBLY
		Same as original listing in 1960 No. T5
		CRK3F REMOTE CONTROL TRANSMITTER ASSEMBLY
		Same as original listing in 1960 No. T5
		CHASSIS ASSEMBLIES CTC10T, U & W
		Same as original listing in 1960 No. T5 except change the following items to read:
P802	213431	Connector—8 contact, male, convergence assembly
R123A, B	107412	Control—On-off-volume or color (CTC10A, B, C, D, T, U)
R137A, B	107413	Control—Brightness or tint (CTC10A, B, C, D, T, U)
R181, R182	109475	Control—Blue or green drive control
R185	105224	Film type, 15,000 ohms, ±10%, 3 w. (CTC-10B, D, F, U)
		Add the following items:
C214	106384	Ceramic—5 mmf., ±10%, 500 v.
C215, C216	———	Ceramic—47 mmf., ±10%, 500 v., N750 (CTC10B, D, F, U)

SYMBOL NO.	STOCK NO.	DESCRIPTION
R142	———	1 megohm, ±10%, ½ w. (CTC10W)
R187	109469	Control—Kinescope bias control
R742	———	Film type, 100,000 ohms, ±10%, ½ w. (CTC-10W)
W101	107465	Cable—VHF tuner to chassis
W106	106808	Cable—UHF tuner to VHF tuner (CTC10B, D, U)
		MISCELLANEOUS
		Use listing below in place of original listing in 1960 No. T5
	107443	Back—Cabinet back less kine cover (211CB-812 & U)
	109570	Back—Cabinet back less kine cover (211-CHR976)
	107416	Board—Antenna terminal
	109222	Board—High voltage transformer terminal board assembly
	Z4815	Cabinet—211CB812 & U
	105002	Cable—Power
	109587	Cable—VHF antenna
	109587	Cable—UHF antenna (CTC10B, D, U)
	102847	Capacitor—Electrolytic, 8 uf., +50 —25%, 10 v.
	106303	Clamp—Safety glass top
	107480	Clip—Cabinet back retaining
	109164	Coil—Pole piece convergence coil and core only (3 req'd)
	105181	Connector—2 contact male interlock
	105256	Connector—Shunt regulator tube cap and lead
	35787	Connector—Speaker
	107468	Cover—Cabinet back kine cover
	107631	Escutcheon—Cabinet remote control microphone for 211CHR976
	107606	Escutcheon—Tint bar for 211CB812 & U
	107607	Escutcheon—Color bar for 211CB812 & U
	106512	Escutcheon—Fine tuning for 211CB812 & U
	109453	Escutcheon—Touch bar for 211CHR976
	109382	Fastener—Focus control knob
	107635	Foot—Cabinet
	106781	Glass—Safety
	107633	Grille—Cabinet remote microphone for 211-CHR976
	71851	Grommet—Microphone cable strain relief
	105023	Holder—Convergence coil and core nylon holder (3 req'd)
	109238	Holder—Fuse for F101
	106356	Holder—Fuse for F102
	109283	Holder—Transmitter cradle for 211CHR976
	102751	Housing—For speaker #102119
	78215	Insulator—High voltage tube socket
	100556	Jewel—Remote control pilot lamp indicator for 211CHR976
	107603	Knob—Color or tint, clear, 211CB812 & U
	109450	Knob—Color-frost finish for 211CHR976
	109189	Knob—Fine tuning, clear, for 211CHR976
	106596	Knob—Fine tuning, clear, for 211CB812 & U
	106278	Knob—On-off-volume or brightness, clear, for 211CB812 & U
	109273	Knob—On-off-volume or brightness, brass finish for 211CHR976
	109451	Knob—Tint-frost finish, for 211CHR976
	107605	Knob—Tone, contrast, vertical or horizontal, clear, for 211CB812 & U
	109571	Knob—Tone, contrast, vertical or horizontal, for 211CHR976
	107269	Knob—UHF tuning, clear, for 211CB812U
	107266	Knob—UHF dial, clear, for 211CB812U
	109398	Knob—VHF, VHF/UHF channel selector for 211CB812 & U
	48474	Lamp—Neon type NE2
	107046	Lamp—Tuner lamp for 211CHR976
	105539	Lead—High voltage anode
	105890	Lead—Deflection yoke lead high voltage
	109247	Lead—Horizontal yoke lead low voltage
	105888	Lead—Vertical yoke lead
	105033	Lining—Kine shield
	103172	Magnet—Lateral magnet assembly
	105024	Magnet—Convergence (3 req'd)
	106459	Mask—Kine mask
	107630	Microphone—Cabinet remote control for 211-CHR976
	109378	Motif—"Color"
	109378	Motif—"New Vista"
	109161	Nameplate—"RCA Victor"
	74712	Nut—Push-on type for kine mask (211CHR-976)
	103795	Nut—Push-on type for tint and color bar escutcheon for 211CB812 & U
	73634	Nut—Retaining kine mask 211CB812 & U
	———	Resistor—Fixed, composition, 56,000 ohms, ±10%, 2 w.
	109162	Panel—Cabinet control panel and speaker baffle assembly for 211CB812
	109163	Panel—Cabinet control panel and speaker baffle assembly for 211CB812U
	109245	Retainer—Focus knob
	107444	Retainer—Safety glass side
	105009	Retainer—Safety glass top and bottom
	105011	Retainer—Safety glass or kine mask retaining bracket
	79604	Ring—Purity coil ring
	106355	Shield—High voltage compartment
	105034	Shield—Kine anode contact
	79721	Shield—Tube for V303, V401
	76972	Shield—Tube for V703, V704
	105415	Slider—Convergence coil and core nylon slider (3 req'd)
	31251	Socket—Convergence plug
	105180	Socket—High voltage tube socket and shield assembly
	106645	Socket—Kine
	107044	Socket—Pilot lamp socket and lead
	102787	Socket—Tube for V102, V104, V105
	102238	Socket—Tube for V106
	102787	Socket—Tube for V107
	105284	Socket—Tube for V201, V202, V301, V302
	105313	Socket—Tube for V203
	105285	Socket—Tube for V303, V401
	109270	Socket—Tube for V401
	107207	Socket—Tube for V402, V601
	109473	Socket—Tube for V701, V702, V705
	102070	Socket—Tube for V703, V704, V706, V707
	107474	Speaker—4" P.M.—3.2 ohms for 211CB812 & U
	102119	Speaker—3½" P.M.—9 ohms for 211CHR976
	107475	Speaker—8" P.M.—3.2 ohms for 211CHR976
	105028	Spring—Anode lead tension
	78445	Spring—Convergence assembly tension
	102296A	Spring—Convergence coil and core holder tension (3 req'd)
	107834	Spring—Convergence coil retaining (6 req'd)
	106565	Spring—Fine tuning escutcheon for 211CB-812 & U
	102582	Spring—Retaining for knob 109398
	109132	Spring—Retaining for knobs 109189, 109273
	109288	Spring—Retaining for knob 109571
	109381	Spring—Retaining for knobs 109450, 109451
	78219	Washer—High voltage insulator cup
	109457	Yoke—Deflection yoke

RCA VICTOR

TELEVISION SERVICE DATA

— 1960 No. T7 —

FOR

KCS134 CHASSIS SERIES

PREPARED BY COMMERCIAL SERVICE
RCA SERVICE COMPANY
A DIVISION OF
RADIO CORPORATION OF AMERICA
CAMDEN 8, N. J.

ELECTRICAL SPECIFICATIONS

ANTENNA INPUT IMPEDANCE.....300 ohms balanced
AUDIO POWER OUTPUT RATING.....1.5 watts max.
FOCUS.....Electrostatic
INTERMEDIATE FREQUENCIES
Picture I-F Carrier Frequency.....45.75 mc.
Sound I-F Carrier Frequency.....41.25 mc.
PICTURE SIZE...Approx. 176 sq. ins. on a 19AFP4 Kinescope
POWER INPUT.....120 Volts AC, 60~
POWER RATING.....195 watts
Remote Control Models.....230 watts
REMOTE CONTROL FREQUENCIES.....40.75 Kc.
.....43.25 Kc.
SWEEP DEFLECTION.....Magnetic
TELEVISION R-F FREQUENCY RANGE
VHF Models
All 12 television channels, 54 mc. to 88 mc., 174 mc. to 216 mc.
UHF/VHF Models
Any of 70 UHF channels.....470 mc. to 890 mc.
Any of 12 VHF channels, 54 mc. to 88 mc., 174 mc. to 216 mc.
VIDEO RESPONSE.....To 3.2 mc.

RCA TUBE COMPLEMENT

TELEVISION CHASSIS

VHF Tuner KRK96P
(KCS134A Chassis)

Tube Used	Function
(1) RCA 6FH5	R-F Amplifier
(2) RCA 6EA8	R-F Oscillator and Mixer

UHF/VHF Tuners KRK97P/66AE
(KCS134B Chassis)

Tube Used	Function
(1) RCA 6AF4A	UHF Oscillator
(2) RCA 6FH5	VHF R-F Amplifier
(3) RCA 6EA8	VHF R-F Oscillator & Mixer; UHF I-F Amplifier

An LD128 crystal is used as the UHF mixer.

VHF Tuner KRK87AC
(KCS134C Chassis)

Tube Used	Function
(1) RCA 6FH5	R-F Amplifier
(2) RCA 6CG8A	R-F Oscillator and Mixer

All Chassis

Tube Used	Function
(1) RCA 6BZ6	1st Picture I-F Amplifier
(2) RCA 6GM6	2nd Picture I-F Amplifier
(3) RCA 6EW6	3rd Picture I-F Amplifier
(4) RCA 6EB8	Video Amp. & 1st Sync.
(5) RCA 6AU6	Sound I-F Amp.
(6) RCA 6DT6	Sound Detector & Audio Amp.
(7) RCA 6BQ5	Audio Output
(8) RCA 6EA8	AGC & Sync. Output
(9) RCA 6DR7	Vert. Osc. & Vert. Output
(10) RCA 6CG7	Horizontal Sweep Oscillator and Control
(11) RCA 6DQ6A	Horizontal Sweep Output
(12) RCA 6DE4	Damper
(13) RCA 1G3GT/1B3GT	High Voltage Rectifier
(14) RCA 19AFP4	Kinescope

A crystal diode is used for the Picture 2nd Detector.

Two silicon rectifiers are used for low voltage rectification.

REMOTE CONTROL AMPLIFIER—KRS24C

(Used in Model 191-BR-254)

Tube Used	Function
(1) RCA 6AU6	1st 40 kc Amp.
(2) RCA 12AX7	2nd & 3rd 40 kc Amps.
(3) RCA 6BN8	40 kc Driver and 40.75 kc & 43.25 kc Rectifiers
(4) RCA 6CM7	Channel Up & Volume Keyers

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MODEL AND CHASSIS REFERENCE

MODEL	CABINET TYPE	CHASSIS	TUNER MOUNTING ASSEMBLY	TUNER	DEFLECTION	KINESCOPE
191-B-242 & 4	Table	KCS134A	TMA19A	KRK96P	114°	19AFP4
191-B-242U & 4U	Table	KCS134B	TMA19B	KRK97P KRK66AE	114°	19AFP4
191-B-255, 6 & 7	Table	KCS134A	TMA19A	KRK96P	114°	19AFP4
191-B-255U, 6U & 7U	Table	KCS134B	TMA19B	KRK97P KRK66AE	114°	19AFP4
*191-BR-254	Table	KCS134C	TMA16A	KRK87AC	114°	19AFP4

The final numeral in the model number designates the cabinet finish, as follows:—2-BLACK, 4-IVORY, 5-MAHOGANY, 6-WALNUT, and 7-OAK. The suffix "U" in the model number identifies instruments with provision for UHF channel reception.

* This model incorporates a KRT1B (2 Button) Remote Control Transmitter and a KRS24C Remote Control Amplifier.

SERVICE ADJUSTMENTS

ANTENNA INPUT

VHF Models

The KRK96P and KRK87AC tuner units provide for VHF reception only with a 300 ohm antenna input provided. A single or double rod-type VHF antenna is provided on these models. [An impedance matching "balun" is employed on receivers using the single rod (monopole) type antenna. Refer to schematic diagram on page 12.]

The antenna rod or rods are connected when the straps on the outer terminals are connected between the outer and inner (VHF) terminals.

If reception from an external antenna is desired, the rod-type antenna is disconnected by loosening the screws on the terminals and swinging the straps back away from the inner (right hand) terminals. The external antenna should then be connected to the inner (right hand) terminals. Tighten the screws on the outer terminals to prevent the straps from shorting to the inner terminals. Push the rod or rods all the way down when using the external antenna.

UHF/VHF Models

The KRK97P/66AE tuner combination is designed for UHF/VHF reception with separate 300 ohm antenna inputs provided. A single or double rod-type antenna is provided for VHF reception and a loop antenna for UHF reception on these models.

When reception from an external VHF antenna is desired, the rod-type antenna should be disconnected and the lead-in from the external antenna connected to the VHF antenna terminals, as explained above for VHF models.

When reception from an external UHF antenna is desired, the loop antenna should be disconnected and the lead-in from the external UHF antenna should be connected to the UHF antenna terminals.

When a combination UHF/VHF antenna is to be used, having a single transmission line, a stub arrangement, such as is shown in A of Figure 1 or a crossover network (RCA Part #78444) as shown in B of Figure 1, may be used to match the single transmission line to the two inputs.

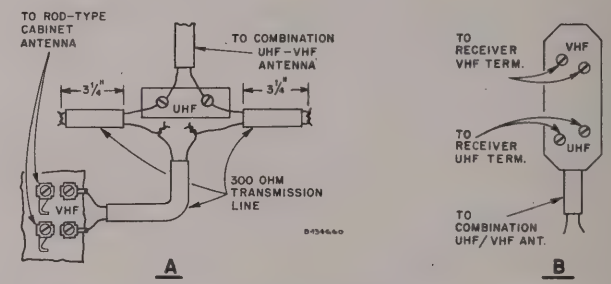

Figure 1—Combination UHF/VHF Antenna Matching

CENTERING ADJUSTMENT

Centering is accomplished by means of two discs with adjusting tabs on the back of the yoke. By alternately rotating one disc with respect to the other, then rotating both discs simultaneously around the neck of the tube, proper centering of the picture will be obtained.

DEFLECTION YOKE ADJUSTMENT

If the lines of the raster are not horizontal or squared with the picture mask, rotate the deflection yoke until this condition is obtained. Tighten the yoke clamp screw.

HIGH VOLTAGE WARNING

OPERATION OF THESE RECEIVERS OUTSIDE THE CABINET OR WITH THE COVERS REMOVED, INVOLVES A SHOCK HAZARD FROM THE RECEIVER POWER SUPPLIES. WORK ON THE RECEIVERS SHOULD NOT BE ATTEMPTED BY ANYONE WHO IS NOT THOROUGHLY FAMILIAR WITH THE PRECAUTIONS NECESSARY WHEN WORKING ON HIGH VOLTAGE EQUIPMENT.

KINESCOPE HANDLING PRECAUTIONS

DO NOT INSTALL, REMOVE OR HANDLE THE KINESCOPE IN ANY MANNER UNLESS SHATTER-PROOF GOGGLES ARE WORN. PEOPLE NOT SO EQUIPPED SHOULD BE KEPT AWAY WHILE HANDLING KINESCOPES. KEEP THE KINESCOPE AWAY FROM THE BODY WHILE HANDLING.

FOCUS

A type 19AFP4 electrostatic focus kinescope is employed in these receivers. The receivers operate with fixed focus, having the focusing electrode connected to ground.

HORIZONTAL OSCILLATOR ADJUSTMENT

Turn the horizontal hold control to the extreme clockwise position. The picture should be out of sync, with a minimum of eight bars slanting downward to the left. Turn the control counter-clockwise slowly. The number of diagonal black bars will be gradually reduced and when only 1½ to 3 bars sloping downward to the left are obtained, the picture will pull into sync upon slight additional counter-clockwise rotation of the control. The picture should remain in sync for approximately one full turn of additional counter-clockwise rotation of the control. Continue counter-clockwise rotation until the picture falls out of sync. Rotation beyond fall out position should produce a minimum of 2 bars before end of rotation or a minimum of 12 bars before interrupted oscillation "motorboat" occurs.

Connect a short jumper across the terminals of the sine wave coil L501-A on PW500 deflection board. Also short the grid of the sync tube, pin 9 of V501, to ground with a small screwdriver or jumper.

Adjust the horizontal hold control to obtain a picture with the sides vertical (picture may drift slowly sideways). Remove the short on the sine wave coil L501-A. The frequency should not change by more than one-half bar when the sine wave coil is properly adjusted.

If in the above check the frequency changed more than one-half bar L501-A should be adjusted. With the short removed, adjust the sine wave coil L501-A to again obtain a picture with the sides vertical. When properly adjusted, alternate shorting or no short should not cause a change in frequency, only a slight sideways shift of the picture should occur.

WIDTH ADJUSTMENT

The width adjustment is L101 and is located at the top of the chassis, above the damper and high voltage compartment.

The width of the picture should be adjusted to fill the mask with a line voltage of 108V. With normal voltage of 120V, the picture should overscan the tube at each side by approximately ¾ inch. The adjustment should be made with the Brightness control set at normal operating position.

HEIGHT AND VERTICAL LINEARITY ADJUSTMENTS

Adjust the height control (R528 on chassis rear) until the picture overscans approximately ⅝" at both top and bottom. Adjust vertical linearity (R531 on chassis rear) until the test pattern is symmetrical from top to bottom. Adjustment of either control will require a readjustment of the other. Adjust centering to align the picture with the mask.

AGC CONTROL ADJUSTMENT

To check the adjustment of the AGC Control, tune in a strong signal and sync the picture. Momentarily remove the signal by switching off channel and then back. If the picture reappears immediately, the receiver is not overloading due to improper setting of R509. If the picture requires an appreciable portion of a second to reappear, or bends excessively, R509 should be readjusted.

Turn R509 fully clockwise. Turn R509 slowly counter-clockwise until there is a very slight bend in the picture. Then turn R509 clockwise just sufficiently to remove the bend.

VHF R-F OSCILLATOR ADJUSTMENT

Tune in all available stations to assure that the receiver r-f oscillator is adjusted to the proper frequency on all channels. If adjustments are required, these should be made by the method outlined in the alignment procedure on Service Data 1960 No. T6

On all models except 191-BR-254 adjustments for channels 2 through 12 are available through the individual holes on the front of the tuner. Adjustment for channel 13 is on top of the tuner chassis. Remove the channel selector knob to make adjustments. Pull knob outward off shaft. Set Fine Tuning to mechanical center of its range. See "A" of Figure 2.

Model 191-BR-254

This model incorporates remote control and the escutcheon plate must be removed. Remove the screw below the channel touch-bar and pull the escutcheon outward to remove.

There are thirteen gear and cam assemblies around the disc on the tuner face. Push in on the fine tuning knob and turn clockwise a minimum of six turns then counter-clockwise three full turns. Repeat this procedure for each channel to be used. This places the fine tuning capacitor at the center of its mechanical range for each channel. Refer to Figure 2B.

Rotate the channel selector with the touch-bar to the individual channels, in any order, and adjust the oscillator slug for all channels to be used. The aperture for adjustment is in the same location for all channels as shown in Figure 2B.—CAUTION: The small numerals on the dial face *do not* designate oscillator adjustments, they refer to the channel programming screws behind the dial. The single aperture for all oscillator adjustments is behind the programming drum, in the front plate of the tuner.

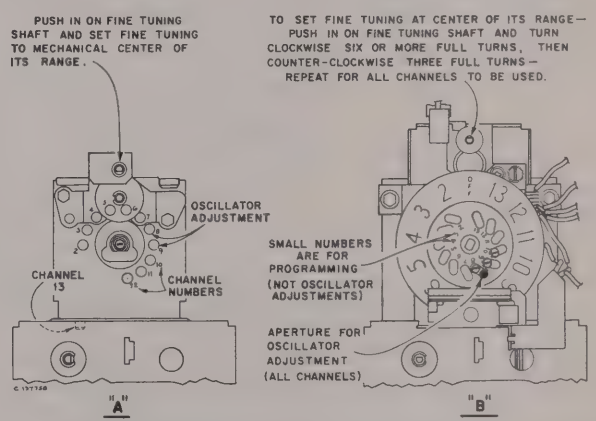
PUSH IN ON FINE TUNING SHAFT AND SET FINE TUNING TO MECHANICAL CENTER OF ITS RANGE.
OSCILLATOR ADJUSTMENT
CHANNEL 13
CHANNEL NUMBERS
"A"
TO SET FINE TUNING AT CENTER OF ITS RANGE— PUSH IN ON FINE TUNING SHAFT AND TURN CLOCKWISE SIX OR MORE FULL TURNS, THEN COUNTER-CLOCKWISE THREE FULL TURNS— REPEAT FOR ALL CHANNELS TO BE USED.
SMALL NUMBERS ARE FOR PROGRAMMING (NOT OSCILLATOR ADJUSTMENTS)
APERTURE FOR OSCILLATOR ADJUSTMENT (ALL CHANNELS)
"B"

Figure 2—VHF Oscillator Adjustments

REMOTE CONTROL PROGRAMMING

Model 191-BR-254 Only

The motor-driven tuner assembly employed in this model is equipped with a programming selector drum which will stop the channel selector automatically at any channels preset on the programming drum. The drum also provides for selection of any unused channel as a "standby" position. The position between channels 13 and 2 is employed as the "off" position and the tuner will stop in this position, each time the position is reached. If the selector is allowed to remain in "off" position, without the channel selector bar or the remote transmitter being actuated, for a period longer than five seconds, the receiver will be turned off completely.

The programming drum, by which the desired channels and the "standby" channel are selected, is located at the front of the tuner and is fastened to the channel selector shaft. Refer to Figure 3. Channel selection is made in the following manner — Remove the fine tuning knob and the screw below the channel selector bar. Remove the escutcheon plate, making the front of the tuner with the programming drum accessible through the opening behind the escutcheon. There are twelve cams around the front of the drum, one for each channel 2 through 13, with a solid metal stud for the "off" position between channels 13 and 2.

Rotate the channel selector to the "off" position. Select each desired channel by turning the corresponding cam for that channel fully clockwise. The correct cam for a particular channel is denoted by the small number next to the opening in the channel dial as indicated in Figure 3. The cams for all unwanted channels should be turned fully counter-clockwise. The cam for the channel selected for "standby" should be turned so the slot in the screw head of the cam for that channel points to the center of the channel selector shaft as shown in Figure 3.

Operation of the remote transmitter or the channel selector bar will cause the channel selector to rotate from low to high channels. The tuner will stop automatically at each channel preset, and also at the "standby" channel. In the "standby" position the sound and picture will be cut off until the transmitter or channel selector is again actuated, at which time the tuner will move to the next highest preset channel.

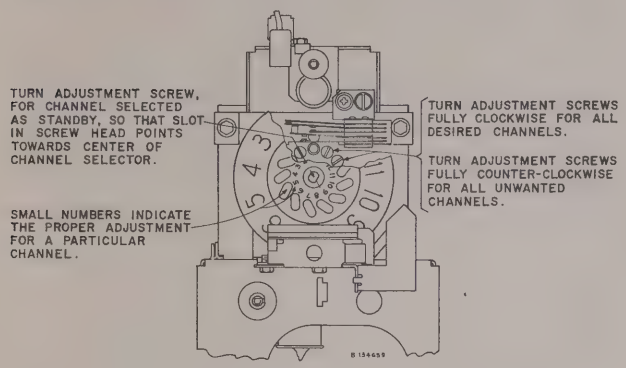
TURN ADJUSTMENT SCREW, FOR CHANNEL SELECTED AS STANDBY, SO THAT SLOT IN SCREW HEAD POINTS TOWARDS CENTER OF CHANNEL SELECTOR.
SMALL NUMBERS INDICATE THE PROPER ADJUSTMENT FOR A PARTICULAR CHANNEL.
TURN ADJUSTMENT SCREWS FULLY CLOCKWISE FOR ALL DESIRED CHANNELS.
TURN ADJUSTMENT SCREWS FULLY COUNTER-CLOCKWISE FOR ALL UNWANTED CHANNELS.

Figure 3—Remote Control Programming

SAFETY GLASS CLEANING

The front safety glass for the 19AFP4 kinescope used in these models is sealed to the face of the kinescope, being a part of the kinescope itself. The front face of the safety glass is all that requires cleaning for these instruments.

The kinescope faceplate should be cleaned with a soft cloth and water only.

CHASSIS AND KINESCOPE REMOVAL

Remove the ten screws holding the rear cover. Move the cover to the rear several inches and disconnect the antenna (cable)s at the tuner, then remove the cover. Unplug the tuner power cable and link cable and disconnect the speaker leads.

Take off the channel, on-off-volume, horizontal, vertical and brightness control knobs by pulling the knobs outward off their shafts. Remove the screws holding the auxiliary bracket to the cabinet and the on-off-volume control to the tuner bracket. On remote control models, remove the screws under the cabinet holding the remote control amplifier to the cabinet.

Unplug the yoke socket and disconnect the kinescope socket. Loosen the clamp on the yoke and slide the yoke off the kinescope neck. Remove the two nuts holding the chassis to the cabinet top and take out the bolts holding the bottom of the chassis. Move the chassis to the rear sufficiently to disconnect the high voltage anode lead from the kinescope. Clear all leads from lances and retaining springs and remove the chassis. The extension shaft on the contrast control will slide out of the control as the chassis is removed.

The kinescope with its strap and bracket assembly should be removed as a unit. Remove the four nuts holding the kinescope brackets to the cabinet front and remove the assembly. Observe the position of the bracket assembly and mount on the new kinescope in the same position on the kinescope bell, then install in the cabinet. Be sure the kinescope faceplate seats forward against the front mask assembly. Replace the chassis by reversing the procedure given above.

TEST EQUIPMENT

To properly service the television chassis of these receivers, it is recommended that the following test equipment be available.

BIAS SUPPLY—RCA WG-307A or equivalent.

CATHODE RAY OSCILLOSCOPE—RCA WO-58A, WO-88A, WO-91A or equivalent.

ELECTRONIC VOLTMETER—A voltmeter with a 1.5 volt DC scale is required. RCA Senior "VoltOhmyst" ® or equivalent.

MATCHING PADS—See Figures 4, 5 and 6.

OSCILLOSCOPE PREAMPLIFIER—Required for alignment of KRK66AE UHF Tuner only.

VHF HETERODYNE FREQUENCY METER—With crystal calibrator if the signal generator is not crystal controlled.

VHF SIGNAL GENERATOR—To provide the following frequencies with crystal accuracy:

(a) Intermediate frequencies
4.5 mc., 39.25 mc. to 47.25 mc.
(b) Radio frequencies
55 to 258 mc.
(c) Output of these ranges should be adjustable and at least .1 volt maximum.

VHF SWEEP GENERATOR—Meeting the following requirements:

(a) Frequency ranges
35 to 90 mc., 1 mc. to 12 mc. sweep width
170 to 225 mc., 12 mc. sweep width
(b) Output adjustable with at least .1 volt maximum.
(c) Output constant on all ranges.
(d) "Flat" output on all attenuator positions.

UHF SWEEP GENERATOR—With a frequency range of 470 mc. to 890 mc. RCA types 40A or 41A or their equivalent.

UHF SIGNAL GENERATOR—To provide frequencies between 461 mc. and 931 mc. with crystal accuracy if RCA Type 41A is used.

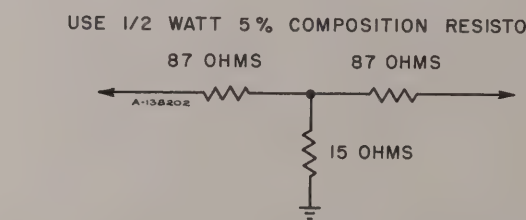

Figure 4—Sound Attenuation Pad

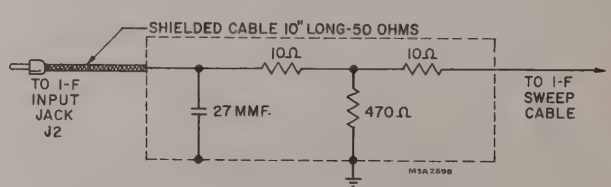

Figure 5—Tuner I-F Input Head

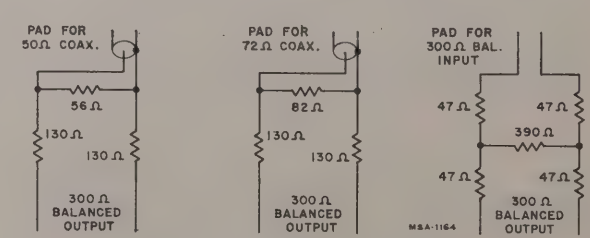

Figure 6—Sweep Attenuator Pads

PICTURE I-F TRANSFORMER AND TRAP ADJUSTMENTS

TEST EQUIPMENT CONNECTIONS:

BIAS ..... Ground the I-F AGC bus at terminal "N" of PW200.
OSCILLOSCOPE ..... Connect to 2nd Detector output at test point TP204. Set scope for 5v. p-p.
SIGNAL GENERATOR ..... Connect to mixer grid, at strap on S1B for KRK96 and KRK97, series tuners or to test point TP2 for KRK87 series tuners, in series with 1500 mmf. capacitor. (See Figure 13.)
SWEEP GENERATOR ..... Connect to the grid of the 3rd picture I-F amplifier, pin 1 of V206, through hole in board. Use shortest leads possible. (See Figure 16.)
VACUUM TUBE VOLTMETER.... Connect to 2nd Detector output at test point TP204. Use DC probe.
MISCELLANEOUS ..... Refer to Figures 13 and 16 for adjustment locations.

STEP		SWEEP GENERATOR	SIGNAL GENERATOR	ADJUST	REMARKS
1	Peak 2nd pix. I-F transformer	———	45.5 mc.	T207	Peak T207 and T206 on frequency for max. output on meter. Adjust generator for 3 volts on meter when finally peaked.
2	Peak 1st pix. I-F transformer	———	43.0 mc.	T206	
3	Adjust 3rd pix. I-F transformer	40-50 mc. (I-F)	41.25 mc. 45.75 mc.	T208 (top & bottom cores)	Adjust for maximum with response shown in Figure 7. Use 5v. p-p on scope.
4	Adjust 47.25 mc. trap	———	47.25 mc.	T205	Adjust for minimum output indication on meter.

SWEEP ALIGNMENT OF PICTURE I-F

TEST EQUIPMENT CONNECTIONS:

BIAS SUPPLY ..... Set for 0.0 volts on I-F AGC bus at "N" of PW200, and —3.5 volts to tuner AGC terminal.
OSCILLOSCOPE ..... Connect a .001 mf. capacitor in series with a 180 ohm resistor from TP202 to ground, with the capacitor connected to TP202. Connect oscilloscope to the junction of the resistor and capacitor, using diode probe. (See Figure 16.)
SWEEP GENERATOR ..... Connect in series with 1500 mmf. to S1B (or TP2 on KRK87 series tuners) at mixer grid. Use shortest leads possible. (See Figure 13.)
SIGNAL GENERATOR ..... Couple loosely to sweep output cable to provide markers.
VACUUM TUBE VOLTMETER.... Connect to 2nd Detector output at test point TP204. Use DC probe.
MISCELLANEOUS ..... Refer to Figures 13 and 16 for adjustment locations.

STEP		SWEEP GENERATOR	SIGNAL GENERATOR	ADJUST	REMARKS
Set channel selector to channel 4.					
5	Adjust mixer plate coil	40 - 50 mc. (I-F)	42.5 mc. 45.75 mc.	L11—KRK87 L50—KRK96 L51—KRK97	Sweep output set for 0.5 v. P-P on scope. Adjust for max. gain and response "A" in Figure 8. Max. allow. tilt 20%. See Figures 13 and 16.
6	Adjust I-F input	40 - 50 mc. (I-F)	42.5 mc. 45.75 mc.	T204	
Repeat step 4 above, if necessary, for minimum output at 47.25 mc. Remove 180 ohm, .001 capacitor and scope from TP202. Connect scope to test point TP204, using direct probe. Set bias supply for —6 volts at terminal "N" of PW200.					
7	Retouch I-F transformers	40 - 50 mc. (I-F)	42.5 mc. 45.0 mc. 45.75 mc.	T208 T207 T206	Adjust for response "B" in Figure 8. Use 5 v. P-P on scope.
Remove sweep from mixer grid. Couple signal generator to mixer, in series with pad shown in Figure 4. Set generator to 45.75 mc. and adjust output for exactly one and one-half (1½) volts on the "VoltOhmyst". Remove the pad and connect generator direct to mixer grid. Do not change generator output in step 8.					
8	Set 41.25 mc. attenuation	——	41.25 mc.	T206 & T208	Adjust for 1.2 to 1.5 volts on VTVM with response "B".
9	Connect sweep generator to antenna terminals using pad shown in Figure 6.				
	Check overall	Chans. 13 to 2	42.5 mc., 45.0 mc. 45.75 mc.	T207 & T208	Retouch slightly to correct overall tilt. Maintain response "B".

SOUND I-F, SOUND DETECTOR AND 4.5 MC TRAP ALIGNMENT

TEST EQUIPMENT CONNECTIONS:

BIAS SUPPLY ..... Apply —10 volts to the I-F AGC bus at terminal "N" on PW200.
OSCILLOSCOPE ..... Connect across speaker voice coil.
SIGNAL GENERATOR ..... Connect to test point TP204 on PW200.
VACUUM TUBE VOLTMETER .... Connect to output of diode detector shown in Figure 10. Set meter for negative voltage readings.
MISCELLANEOUS ..... Connect test diode detector, see Figure 10, to pin 7 of V202. Refer to Figure 16 for adjustment locations.

STEP		SIGNAL GENERATOR	ADJUST	REMARKS
Set contrast control maximum clockwise.				
10	Adjust Driver Transformer Primary and Secondary	4.5 mc.	T202 (top & bottom)	Adjust T202 top & bottom for maximum on meter. Set generator for 1.0 to 1.5 volts when peaked. Peak cores at open end of coils.
11	Adjust Sound Take-Off Trans.	4.5 mc.	T201	Adjust T201 for maximum negative DC on meter. Set generator for 1.0 to 1.5 volts on meter.
12	Disconnect the diode test detector. Turn off signal generator and tune in strongest signal in area adjusting volume control for normal volume (approx. ¼ turn from c.c.w.). Turn core of T203 flush with top of coil form.			
13	Adjust Sound Detector Trans.	Observing oscilloscope and listening to audio output adjust T203 clockwise to a peak. Continue clockwise to second louder peak and adjust for maximum on this peak.		
Move the oscilloscope to the kinescope cathode. Use the diode probe. Set the contrast control to maximum clockwise position.				
14	Adjust 4.5 mc. trap	4.5 mc., A-M Mod., 400 Cycles	T209	Adjust for minimum 400 cycle indication on oscilloscope.
	Alternate Method Using Generators With F-M Modulation Provided.			
10	Same as step 10 above. Modulate 4.5 mc. signal with F-M 400 cycle signal with 7½ kc. deviation.			
11	Same as step 11 above. Modulate 4.5 mc. signal with F-M 400 cycle signal with 7½ kc. deviation.			
12	Adjust Sound Detector Trans.	4.5 mc., 400 cycle F-M Mod., 7½ kc. Dev.	T203	Adjust T203 for max. 400~ output on scope using max. amplitude peak. Set volume control for .70 v. p-p on scope when peaked. See response in Figure 9.
13	Retouch Driver and Sound Take-Off. Trans. for breakout	4.5 mc., 400 cycle F-M Mod., 7½ kc. Dev.	T201 & T202	Decrease input to minimum usable signal. Retouch T201 & T202 for symmetrical breakout. Response in Figure 9.
Move the oscilloscope to the kinescope cathode. Use the diode probe. Set the contrast control to maximum clockwise position.				
14	Adjust 4.5 mc. trap	Same as step 14 above. Adjust for minimum 400 cycle indication on oscilloscope.		

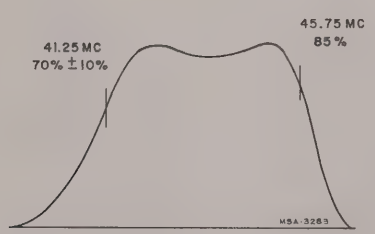

Figure 7—T208 3rd Pix I-F Response

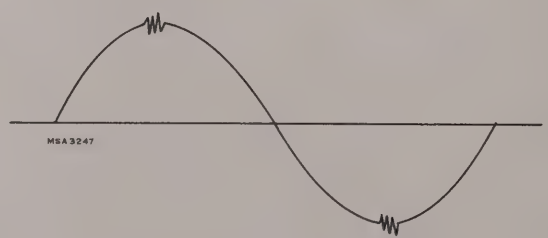

Figure 9—Sound Detector Response

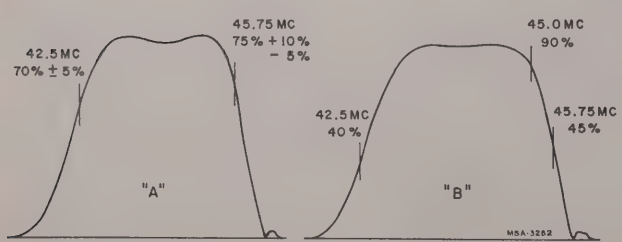

Figure 8—Mixer Plate and Overall I-F Response

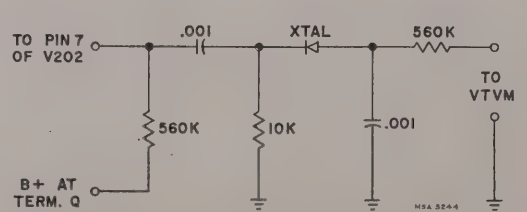

Figure 10—Sound Diode Detector

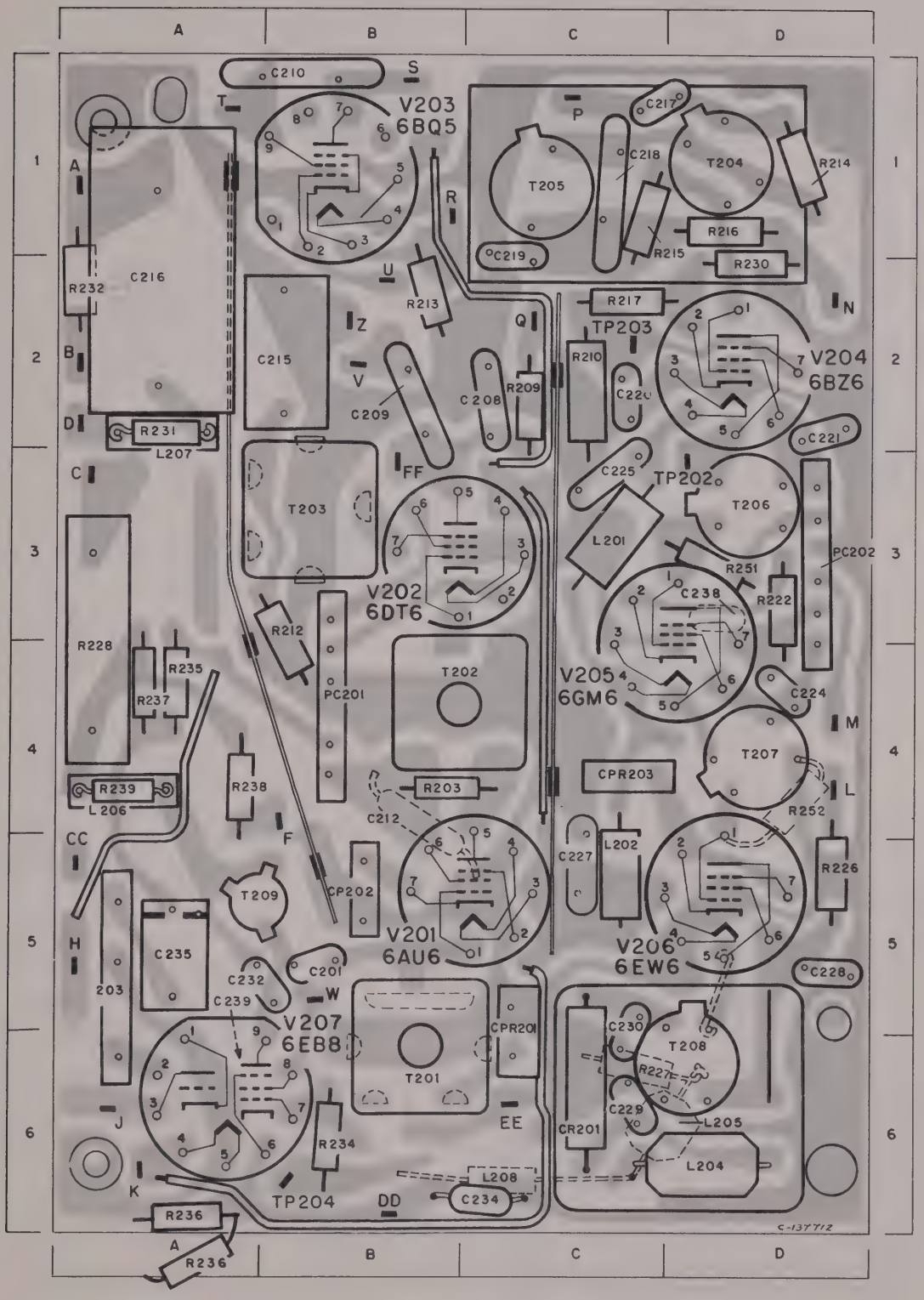

Figure 14—PW200 Sealed Circuit I-F and Video Assembly Composite Diagram

PW200 COMPONENT LOCATION GUIDE

C201	B5
C208	C2
C209	B2
C210	B1
C212	B4
C215	B2
C216	A1
C217	C1
C218	C1
C219	C1
C220	C2
C221	D2
C224	D4
C225	C3
C227	C5
C228	D5
C229	C6
C230	C5
C232	B5
C234	C6
C235	A5
C238	D3
C239	A6
CPR201	C5
CPR202	B5
CPR203	C4
CR201	C6
L201	C3
L202	C5
L204	D6
L205	D6
L206	A4
L207	A2
L208	C6
PC201	B4
PC202	D3
PC203	A5
R203	B4
R209	C2
R210	C2
R212	B3
R213	B2
R214	D1
R215	C1
R216	D1
R217	C2
R222	D3
R226	D5
R227	C6
R228	A4
R230	D1
R231	A2
R232	A2
R234	B6
R235	A4
R236	A6
R237, R238, R239	A4
R251	D3
R252	D4
T201	B6
T202	C4
T203	B3
T204	D1
T205	C1
T206	D3
T207	D4
T208	D6
T209	A5

SOUND I-F, SOUND DETECTOR AND 4.5 MC TRAP ALIGNMENT

TEST EQUIPMENT CONNECTIONS:

BIAS SUPPLY ..... Apply —10 volts to the I-F AGC bus at terminal "N" on PW200.
OSCILLOSCOPE ..... Connect across speaker voice coil.
SIGNAL GENERATOR ..... Connect to test point TP204 on PW200.
VACUUM TUBE VOLTMETER .... Connect to output of diode detector shown in Figure 10. Set meter for negative voltage readings.
MISCELLANEOUS ..... Connect test diode detector, see Figure 10, to pin 7 of V202. Refer to Figure 16 for adjustment locations.

STEP		SIGNAL GENERATOR	ADJUST	REMARKS
Set contrast control maximum clockwise.				
10	Adjust Driver Transformer Primary and Secondary	4.5 mc.	T202 (top & bottom)	Adjust T202 top & bottom for maximum on meter. Set generator for 1.0 to 1.5 volts when peaked. Peak cores at open end of coils.
11	Adjust Sound Take-Off Trans.	4.5 mc.	T201	Adjust T201 for maximum negative DC on meter. Set generator for 1.0 to 1.5 volts on meter.
12	Disconnect the diode test detector. Turn off signal generator and tune in strongest signal in area adjusting volume control for normal volume (approx. ¼ turn from c.c.w.). Turn core of T203 flush with top of coil form.			
13	Adjust Sound Detector Trans.	Observing oscilloscope and listening to audio output adjust T203 clockwise to a peak. Continue clockwise to second louder peak and adjust for maximum on this peak.		
Move the oscilloscope to the kinescope cathode. Use the diode probe. Set the contrast control to maximum clockwise position.				
14	Adjust 4.5 mc. trap	4.5 mc., A-M Mod., 400 Cycles	T209	Adjust for minimum 400 cycle indication on oscilloscope.
	Alternate Method Using Generators With F-M Modulation Provided.			
10	Same as step 10 above. Modulate 4.5 mc. signal with F-M 400 cycle signal with 7½ kc. deviation.			
11	Same as step 11 above. Modulate 4.5 mc. signal with F-M 400 cycle signal with 7½ kc. deviation.			
12	Adjust Sound Detector Trans.	4.5 mc., 400 cycle F-M Mod., 7½ kc. Dev.	T203	Adjust T203 for max. 400~ output on scope using max. amplitude peak. Set volume control for .70 v. p-p on scope when peaked. See response in Figure 9.
13	Retouch Driver and Sound Take-Off. Trans. for breakout	4.5 mc., 400 cycle F-M Mod., 7½ kc. Dev.	T201 & T202	Decrease input to minimum usable signal. Retouch T201 & T202 for symmetrical breakout. Response in Figure 9.
Move the oscilloscope to the kinescope cathode. Use the diode probe. Set the contrast control to maximum clockwise position.				
14	Adjust 4.5 mc. trap	Same as step 14 above. Adjust for minimum 400 cycle indication on oscilloscope.		

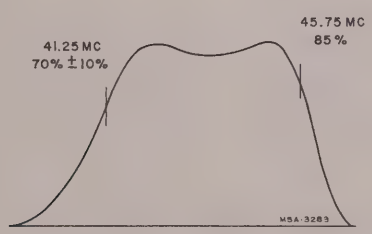

Figure 7—T208 3rd Pix I-F Response

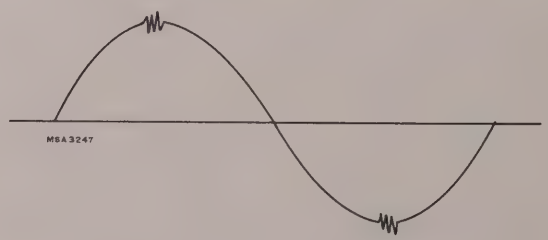

Figure 9—Sound Detector Response

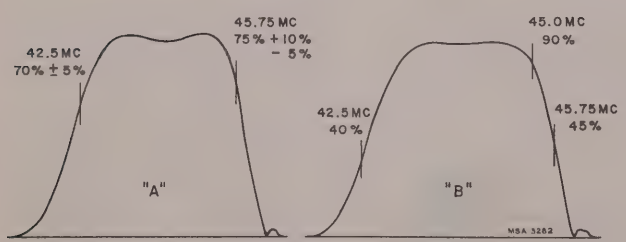

Figure 8—Mixer Plate and Overall I-F Response

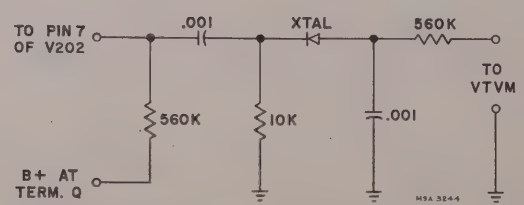

Figure 10—Sound Diode Detector

KRK87AC VHF TUNER R-F ALIGNMENT

Refer to Service Data 1960 No. T6 page 8 for R-F alignment for the KRK87AC tuner

KRK97P VHF TUNER I-F ALIGNMENT

Refer to Service Data 1960 No. T6 page 9 for I-F alignment for the KRK97P tuner

KRK96P & KRK97P VHF TUNER R-F ALIGNMENT

Refer to Service Data 1960 No. T6 pages 10 and 11 for R-F alignment for these tuners

KRK66AE UHF TUNER ALIGNMENT

Refer to Service Data 1960 No. T6 page 12 for alignment for the KRK66AE UHF tuner

KRS24C REMOTE CONTROL AMPLIFIER ALIGNMENT

Refer to Service Data 1960 No. T6 page 13 for alignment for the KRS24C amplifier

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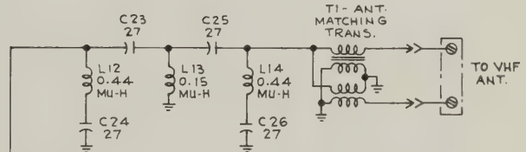
KRK87AC VHF TUNER SCHEMATIC DIAGRAM

NOTE: The KCS134C chassis noted below is identical to chassis shown in the large schematic, Figure 17 except for the tuner, which is shown in schematic at the right. See notation below.

REFER TO PAGE TWO FOR CHASSIS/TUNER/MODEL CROSS-REFERENCE INFORMATION



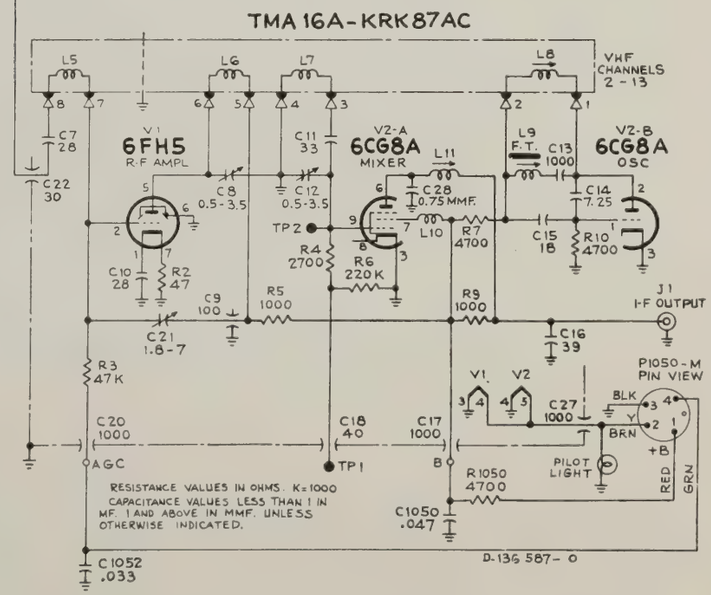


Figure 11—KRK87AC VHF Tuner Schematic Diagram for KCS134C Chassis

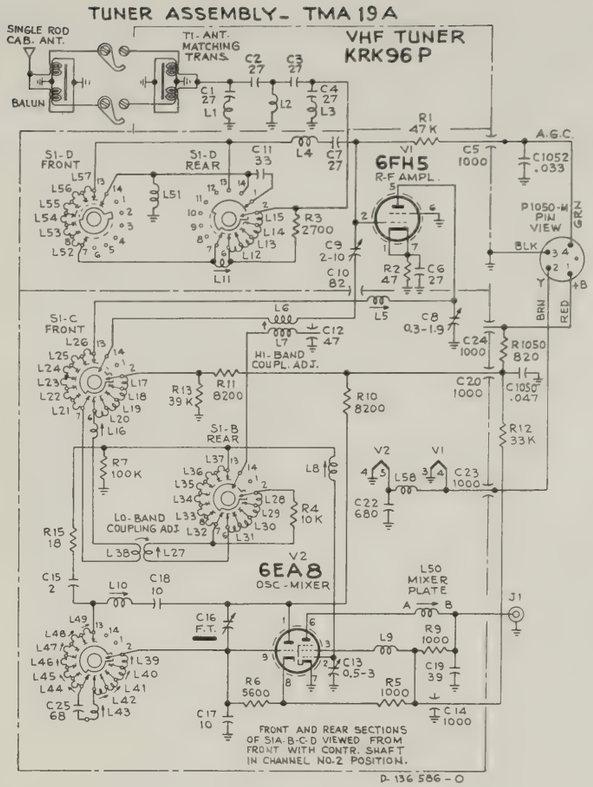


Figure 12—KRK96P VHF Tuner Circuit Schematic Diagram for KCS134A Chassis

NOTE: The KCS134A chassis noted above is identical to chassis shown in the large schematic, Figure 17 except for the tuner, which is shown in schematic at the left.—See notation below.

REFER TO PAGE TWO FOR CHASSIS/TUNER/MODEL CROSS-REFERENCE INFORMATION

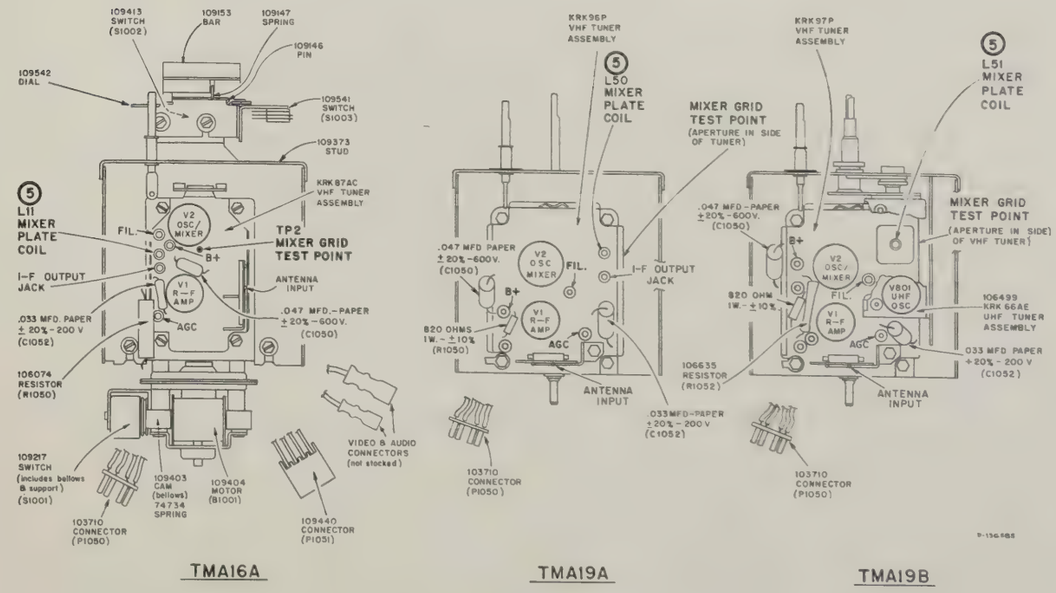

109413 SWITCH (S1002)
109153 BAR
109147 SPRING
109146 PIN
109542 DIAL
109541 SWITCH (S1003)
109373 STUD
KRK87AC VHF TUNER ASSEMBLY
(5) L11 MIXER PLATE COIL
FIL.
V2 OSC/ MIXER
B+
TP2 MIXER GRID TEST POINT
I-F OUTPUT JACK
V1 R-F AMP
ANTENNA INPUT
AGC
.033 MFD. PAPER ± 20% - 200 V (C1052)
.047 MFD.- PAPER ± 20% - 600V. (C1050)
106074 RESISTOR (R1050)
109217 SWITCH (includes bellows & support) (S1001)
109403 CAM (bellows) 74734 SPRING
109404 MOTOR (B1001)
103710 CONNECTOR (P1050)
VIDEO & AUDIO CONNECTORS (not stocked)
109440 CONNECTOR (P1051)
TMA16A
KRK96P VHF TUNER ASSEMBLY
(5) L50 MIXER PLATE COIL
.047 MFD PAPER ± 20% - 600V. (C1050)
820 OHMS 1W. - ± 10% (R1050)
I-F OUTPUT JACK
.033MFD-PAPER ± 20% - 200 V (C1052)
106635 RESISTOR (R1052)
TMA19A
KRK97P VHF TUNER ASSEMBLY
(5) L51 MIXER PLATE COIL
MIXER GRID TEST POINT (APERTURE IN SIDE OF TUNER)
.047 MFD.- PAPER ± 20% - 600V. (C1050)
820 OHM 1W. - ± 10%
V80I UHF OSC
106499 KRK 66AE UHF TUNER ASSEMBLY
.033 MFD PAPER ± 20% - 200 V (C1052)
103710 CONNECTOR (P1050)
TMA19B

Figure 13—TMA16A and TMA19A & B Tuner Mounting Assemblies

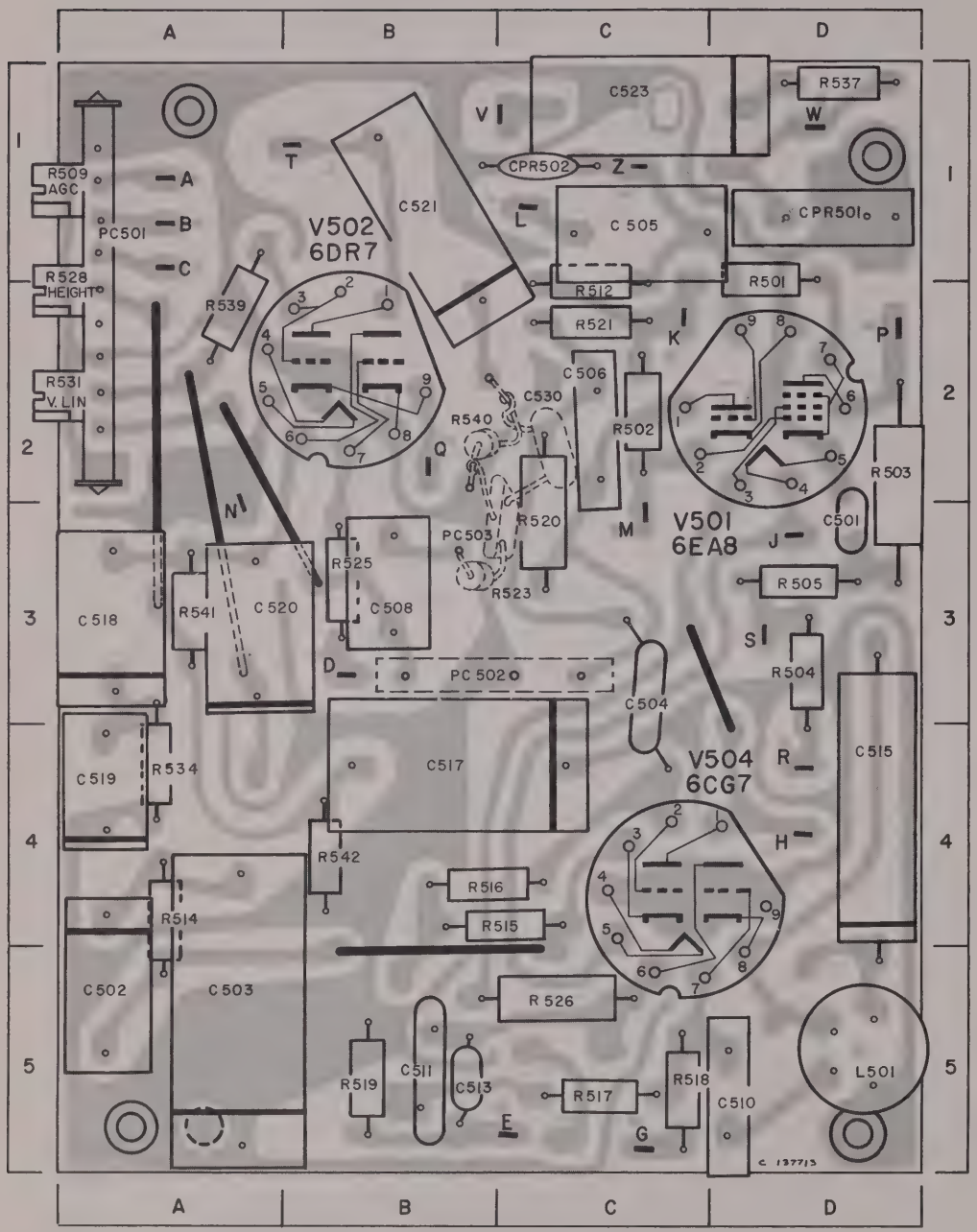


Figure 15—PW500 Sealed Circuit Deflection Assembly Composite Diagram

PW500 COMPONENT LOCATION GUIDE

C501	D3
C502	A5
C503	A5
C504	C3
C505	C1
C506	C2
C508	B3
C510	D5
C511	B5
C513	B5
C515	D4
C517	B4
C518	A3
C519	A4
C520	A3
C521	B1
C523	C1
C530	B2
CPR501	D1
CPR502	C1
L501	D5
PC501	A2
PC502	C3
PC503	B3
R501	D2
R502	C2
R503	D2
R504	D3
R505	D3
R512	C2
R514	A4
R515	C4
R516	B4
R517	C5
R518	C5
R519	B5
R520	C3
R521	C2
R523	B3
R525	B3
R526	C5
R534	A4
R537	D1
R539	A2
R540	B3
R541	A3
R542	B4

The assemblies represented above and on page 9, are viewed from the component side of the circuits and are oriented as they will usually be viewed when servicing the chassis.

Figures 14 and 15 are diagrammatic views of the circuits showing the printed wiring in a "phantom" view superimposed on the component layout. These presentations provide for rapid circuit tracing while referring to only the component side of the assemblies.

The coordinate letters and numbers, shown at the sides of the assembly views, are provided for rapid location of components. Reference to the location guide will show the location of any given component. The desired component location will be found in the area designated by the particular letter/number combination indicated.

SYMBOL NO.	STOCK NO.	DESCRIPTION
		TMA16A VHF TUNER MOUNTING ASSEMBLY (Includes KRK87AC Tuner Assembly Listed Below—Refer to Page 2 for Cross-Reference Information) *(Refer to Figure 13)*
B1001	109404	Motor—115 v. 60 CPS
C1050	———	Capacitor—Paper, .047 mf., ±20%, 600 v.
C1052	———	Capacitor—Paper, .033 mf., ±20%, 200 v.
P1050	103710	Connector—4 contact male, power
P1051	109440	Connector—4 contact male, motor
R1050	106074	Resistor—Fixed wire wound, 4700 ohms, ±10%, 7 w.
S1001	109217	Switch—Off-on pneumatic master switch bellows and support assembly
S1002	109413	Switch—Channel selector actuating
S1003	109541	Switch—Motor on-off touch bar
	109153	Bar—Remote motor touch bar
	109403	Cam—Bellows actuating cam
	109542	Dial—Channel selector dial, blue acetate
	107799	Gear—Fine tuning shaft drive gear
	109146	Pin—Touch bar pivot
	109427	Shaft—Fine tuning shaft and gear
	102310	Socket—Pilot lamp socket and lead
	74734	Spring—Cam and dial retaining spring clip
	107969	Spring—Tension for fine tuning intermediate
	109147	Spring—Touch bar torsion
	109373	Stud—Adjusting stud
		KRK37AC VHF TUNER ASSEMBLY
		CAPACITORS
C7	107877	Ceramic—28 mmf., ±10%, N750, 500 v.
C8	109218	Variable Ceramic—.5 - 3. mmf.
C9	107879	Feed thru, 100 mmf., ±5%, 500 v.
C10	107877	Ceramic—28 mmf., ±10%, N750, 500 v.
C11	107880	Ceramic—33 mmf., 500 v., N750
C12	109218	Variable Ceramic—.5 - 3. mmf.
C13	107885	Ceramic—1000 mmf., GMV, 500 v.
C14	109424	Ceramic—7.25 mmf., +.5-.25 mmf., N80, 500 v.
C15	107884	Ceramic—18 mmf., ±10%, N220, 500 v.
C16	107887	Ceramic—39 mmf., ±5%, N750, 500 v.
C17	107878	Feed thru, 1000 mmf., GMV
C18	107881	Feed thru, 40 mmf.
C19, C20	107878	Feed thru, 1000 mmf., GMV
C21	107886	Trimmer—1.8 - 7.0 mmf.
C22	107876	Feed thru, 30 mmf., ±7½%, 750 v.
C23 to C26	107875	Ceramic—27 mmf., ±10%, N750, 500 v. (Part of T1)
C27	107878	Feed thru, 1000 mmf., GMV
C28	109425	Ceramic—.75 mmf., ±10%, 500 v.
L5 to L8	———	(Part of channel inserts)
L9	107888	Coil—Fine tuning coil less core
L10	———	Coil—Screen grid
L11	107889	Coil—I.F.
L12	———	Coil—Part of T1
L13	———	Coil—Part of T1
L14	———	Coil—Part of T1
		RESISTORS **Fixed, Composition—Unless Otherwise Specified:**
R2	107895	47 ohms, ±10%, ¼ w.
R3	107890	47,000 ohms, ±20%, ¼ w.
R4	107892	2700 ohms, ±10%, ¼ w.
R5	———	1000 ohms, ±20%, ½ w.
R6	107893	220,000 ohms, ±20%, ¼ w.
R7	———	4700 ohms, ±20%, ½ w.
R9	107891	1000 ohms, ±20%, ¼ w.
R10	107894	4700 ohms, ±20%, ¼ w.
T1	107896	Network—VHF antenna input assembly
		MISCELLANEOUS
	107897	Ball—Detent
	107920	Board—Stator board and mounting bracket assembly
	107911	Bracket—Fine tuning coil mounting
	109152	Cam—Fine tuning cam (phenolic)
	109155	Cam—Selector cam (nylon)
	107918	Core—Channel insert tuning core
	107912	Core—Fine tuning core and grommet
	109573	Detent—Channel selector detent complete
	107898	Insert—Channel #2
	107899	Insert—Channel #3
	107900	Insert—Channel #4
	107901	Insert—Channel #5
	107902	Insert—Channel #6
	107903	Insert—Channel #7
	107904	Insert—Channel #8
	107905	Insert—Channel #9
	107906	Insert—Channel #10
	107907	Insert—Channel #11
	107908	Insert—Channel #12
	107909	Insert—Channel #13
	109575	Lever—Fine tuning lever
	107915	Retainer—Detent shaft
	107919	Spring—Channel selector detent shaft front retaining (formed)
	109576	Spring—Channel selector detent shaft rear retaining (formed)
	109574	Spring—Fine tuning lever tension
	107459	Washer—Spring grip, for fine tuning drive gear tension
		TMA19A VHF TUNER MOUNTING ASSEMBLY (Includes KRK96P VHF Tuner Assembly Listed Below—Refer to Page 2 for Cross-Reference Information) *(Refer to Figure 13)*
C1050	———	Capacitor—Paper, .047 mf., ±20%, 600 v.
C1052	———	Capacitor—Paper, .033 mf., ±20%, 200 v.
P1050	103710	Connector—4 contact male, power
R1050	———	Resistor—Fixed comp., 820 ohms, ±10%, 1 w.
		KRK96P VHF TUNER ASSEMBLY
		CAPACITORS
C1 to C4	109348	Ceramic—27 mmf., ±5%, 500 v. (Part of antenna matching assembly)
C5	105660	Feed thru, 1000 mmf.
C6	109372	Circuit—Capacitor-resistor comb., 27 mmf., ±20%, 500 v. (Includes R2)
C7	107875	Ceramic—27 mmf., ±10%, 500 v.
C8	105507	Trimmer—.34 to 1.9 mmf.
C9	109377	Variable, Ceramic—2. to 10 mmf.
C10	109351	Feed thru, 82 mmf.
C11	107297	Ceramic—33 mmf., ±10%, 500 v. (Part of S1D)
C12	109352	Feed thru, 47 mmf.
C13	104052	Trimmer—.5 to 3.0 mmf.
C14	105660	Feed thru, 1000 mmf.
C15	79992	Ceramic—2.0 mmf., ±.25%, 500 v.
C16	———	(Part of S1A)
C17	76350	Ceramic—10 mmf., ±.5 mmf., 500 v.
C18	76350	Ceramic—10 mmf., ±.5 mmf., 500 v. (Part of S1A)
C19	107232	Ceramic—39 mmf., ±10%, 500 v.
C20	105660	Feed thru, 1000 mmf.
C21, C22	77624	Ceramic—680 mmf., +100 —0%, 500 v.
C23	105660	Feed thru, 1000 mmf.
C24	105660	Feed thru, 1000 mmf.
C25	104224	Ceramic—68 mmf., ±10%, 500 v. (Part of S1A)
J1	107588	Connector—Single contact female I.F. output
L1 to L3	———	(Part of Ant. Matching Network)
L4	———	(Part of S1D)
L5	103558	Form—Coil form and core assembly (Part of S1C)
L6, L7	———	(Part of Hi-Band Coupling Adj.)
L8	103558	Form—Coil form and core assembly (Part of S1B)
L9	———	Coil—R.F. filter
L10	109345	Form—Coil form and core assembly (Part of S1A)
L11 to L15	———	(Part of S1D)
L16 to L26	———	(Part of S1C)
L27	———	(Part of Low band coupling adj.)

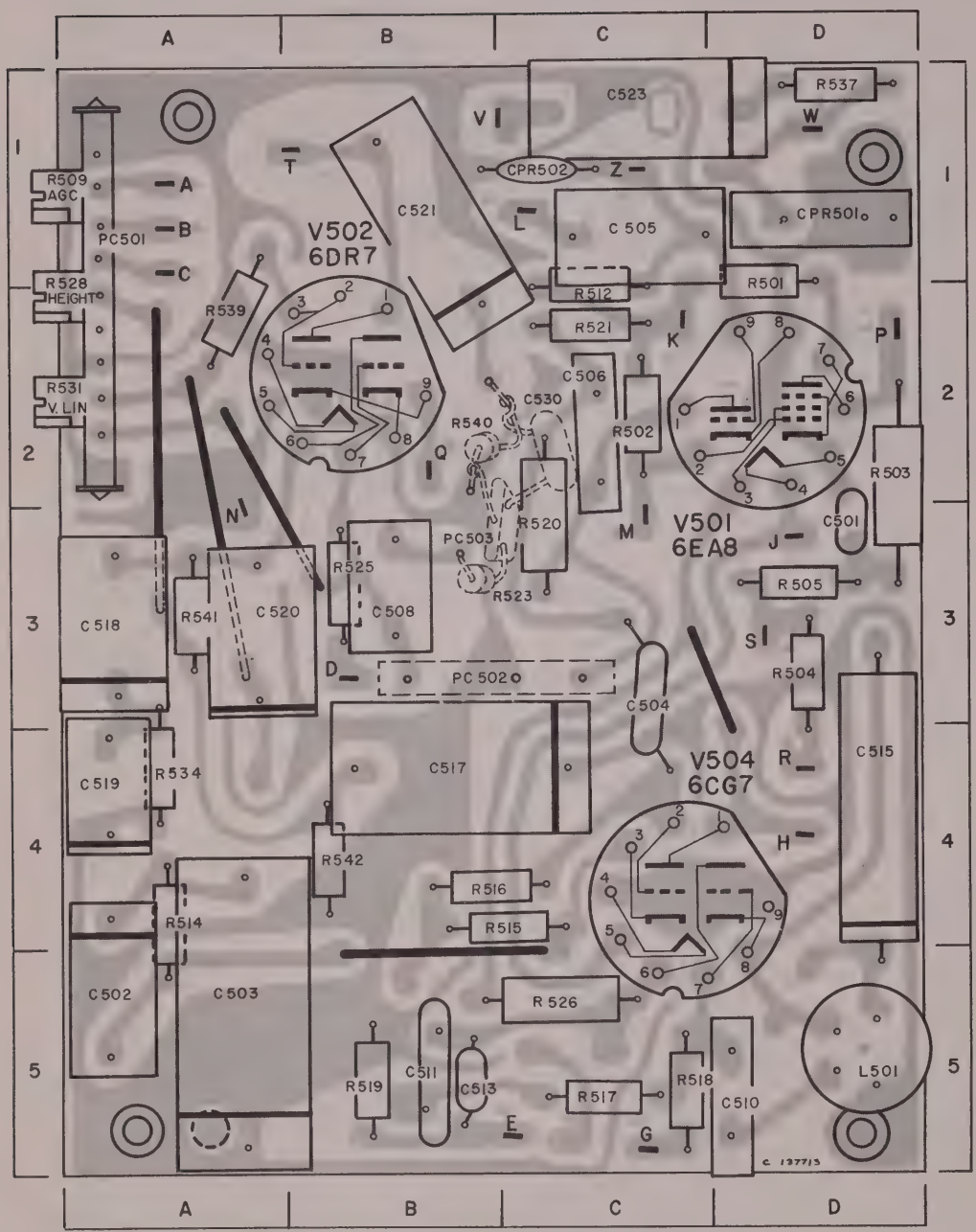


Figure 15—PW500 Sealed Circuit Deflection Assembly Composite Diagram

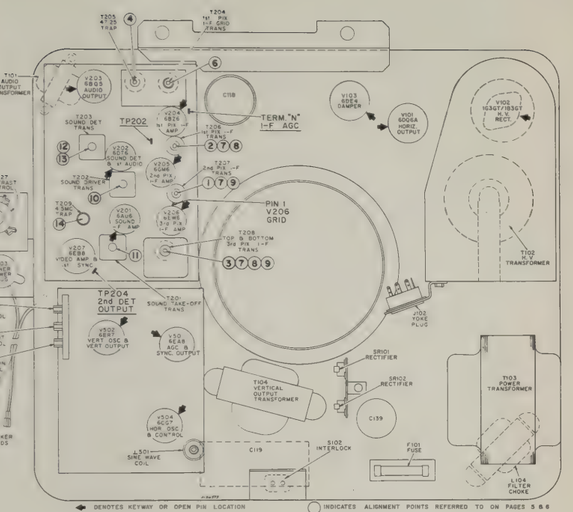
PW500 COMPONENT LOCATION GUIDE

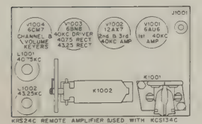
C501	D3
C502	A5
C503	A5
C504	C3
C505	C1
C506	C2
C508	B3
C510	D5
C511	B5
C513	B5
C515	D4
C517	B4
C518	A3
C519	A4
C520	A3
C521	B1
C523	C1
C530	B2
CPR501	D1
CPR502	C1
L501	D5
PC501	A2
PC502	C3
PC503	B3
R501	D2
R502	C2
R503	D2
R504	D3
R505	D3
R512	C2
R514	A4
R515	C4
R516	B4
R517	C5
R518	C5
R519	B5
R520	C3
R521	C2
R523	B3
R525	B3
R526	C5
R534	A4
R537	D1
R539	A2
R540	B3
R541	A3
R542	B4

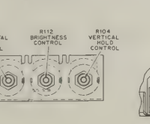
The assemblies represented above and on page 9, are viewed from the component side of the circuits and are oriented as they will usually be viewed when servicing the chassis.

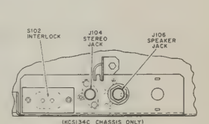
Figures 14 and 15 are diagrammatic views of the circuits showing the printed wiring in a "phantom" view superimposed on the component layout. These presentations provide for rapid circuit tracing while referring to only the component side of the assemblies.

The coordinate letters and numbers, shown at the sides of the assembly views, are provided for rapid location of components. Reference to the location guide will show the location of any given component. The desired component location will be found in the area designated by the particular letter/number combination indicated.


T201 AUDIO OUTPUT TRANSFORMER
V203 6BQ5 AUDIO OUTPUT
V202 6BZ6 2nd DET & AVC
V201 6AU6 1ST AUDIO
V204 6BZ6 2nd PIX I-F AMP.
V205 6GM6 3rd PIX I-F AMP.
V206 6EW6 3RD PIX I-F TRANS
V207 6EB8 AGC & SYNC
V208 6EB8 VIDEO AMP & 1ST SYNC
V209 6DT6 SND DET 1ST AUDIO
V210 6BZ6 1ST PIX I-F AMP.
V211 6AU6 SOUND I-F AMP.
V212 6DT6 SND DET DRIVER
V213 6BQ5 AUDIO OUTPUT
V103 6DE4 DAMPER
V102 6DQ6A HOR. OUTPUT
V101 1B3GT/8SGT RECT.
TP202
TERM "N" I-F AGC
PIN 1 V206 GRID
TP204 2nd DET OUTPUT
T102 TRANSFORMER
T103 POWER TRANSFORMER
T104 VERTICAL OUTPUT TRANSFORMER
SR101 RECTIFIER
SR102 RECTIFIER
C139
J102 YOKE PLUG
R127 CONTRAST CONTROL
J101 POWER CORD
R509 AGC CONTROL
R528 HOLD CONTROL
R531 VERT. CONTROL
SPEAKER LEADS
V205 6BZ6 VERT. OSC & VERT. OUTPUT
V204 6EA8 HOR. OSC & CONTROL
V206 6EA8 AGC & SYNC OUTPUT
T105 SOUND TAKE-OFF TRANS.
C119
.5MH SINE WAVE COIL
S102 INTERLOCK
F101 FUSE
L104 FILTER CHOKE
DENOTES KEYWAY OR OPEN PIN LOCATION
INDICATES ALIGNMENT POINTS REFERRED TO ON PAGES 5 & 6







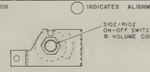
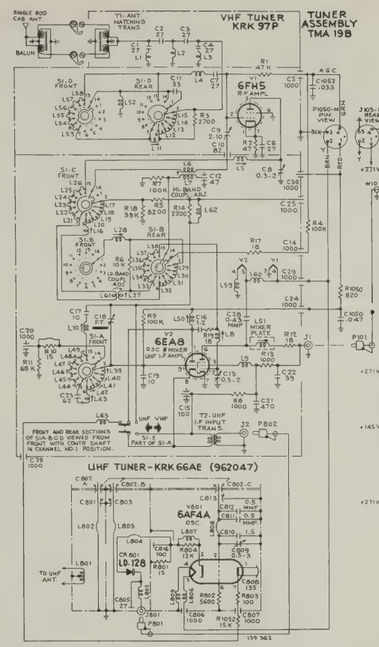


Figure 16—Chassis Rear View

REFER TO TABLE ON PAGE TWO FOR MODEL CHASSIS/TUNER CROSS-REFERENCE



All schematics are shown in the latest condition at the time of printing.

All resistance values in ohms. K = 1000.

All capacitance values less than 1 in MF and above 1 in MF unless otherwise noted.

Direction of arrows at controls indicates clockwise rotation.

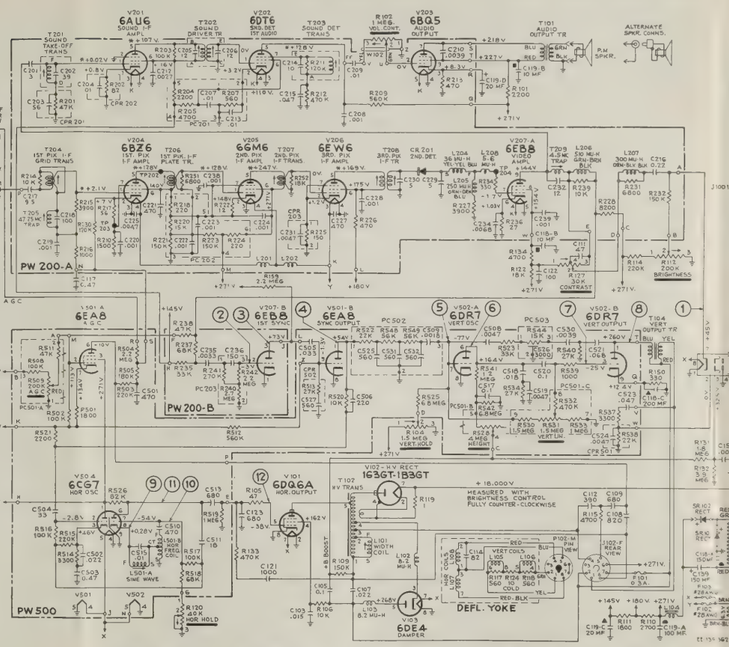
All voltages measured with "Volt-Ohmyst" and with no signal input. Voltages should hold within ±20% with 120 v, a-c supply.

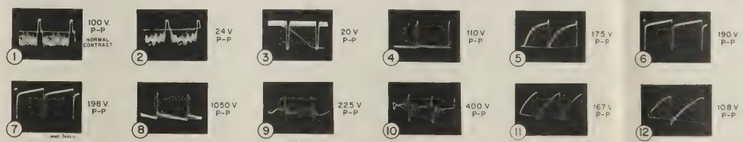
*Measured with 1 megohm, ½ watt resistor in series with meter probe.

Balloons ①②③ etc., shown on schematic indicate points of observation of the waveforms shown below the schematic.

CIRCUIT SCHEMATIC DIAGRAM FOR KCS134A, B & C CHASSIS

(See Page 8 for KRK96P VHF Tuner used with KCS134A Chassis)
(See Page 7 for KRK87AC Tuner used with KCS134C Chassis) — (KCS134C Chassis Incorporates Remote Control)


V201 6AU6 SOUND I-F AMP.
V202 6DT6 SND. DET 1ST AUDIO
V203 6BQ5 AUDIO OUTPUT
V204 6BZ6 1ST PIX I-F AMP.
V205 6GM6 2ND PIX I-F AMP.
V206 6EW6 3RD PIX I-F TRANS
V207-A 6EB8 SYNC SEP. & AGC
V207-B 6EB8 1ST SYNC
V208 6EA8 SYNC OUTPUT
V209 6DR7 VERT. OSC.
V210 6DR7 VERT. OUTPUT
V211 6DQ6A HOR. OUTPUT
V212 1B3GT-1B3GT HV RECT.
V213 6DE4 DAMPER
PW 200-A
PW 200-B
PW 500
DEFL. YOKE
ALTERNATE SPKR. CONNS.
PM SPKR.



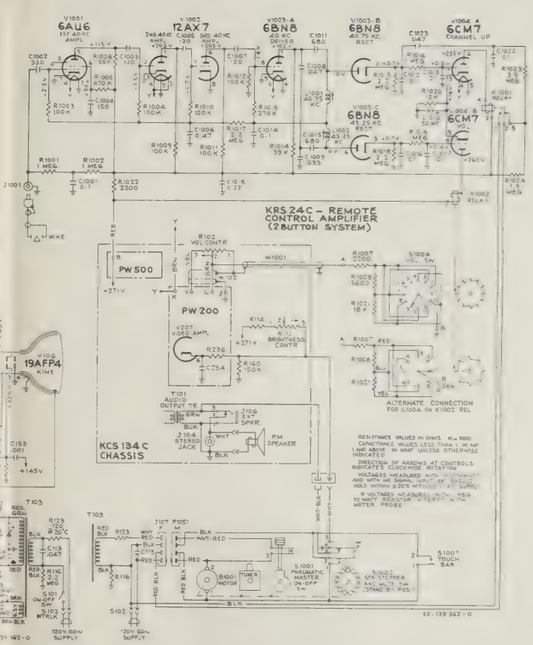

V1001 6AU6 1ST 40 MC AMP.
V1002 12AX7 2nd 45 MC AMP. 3rd 40 MC AMP.
V1003-A 6BN8 40 MC AGC RECT.
V1003-B 6BN8 40 MC VID. RECT.
V1004-A 6BN8 A1 & A2 SYNC SEP.
V1004-B 6CM7 CHANNEL UP
V1005 6CM7
KRS24C - REMOTE CONTROL AMPLIFIER (2 BUTTON SYSTEM)
PW 500
PW 200
KCS 134C CHASSIS
19AF P4 PICT.
ALTERNATE CONNECTION FOR S1004 ON K1002 REL.
RESISTANCE VALUES IN OHMS. K = 1000. CAPACITANCE VALUES LESS THAN 1 IN MF AND ABOVE IN MMF UNLESS OTHERWISE INDICATED
DIRECTION OF ARROWS AT CONTROLS INDICATES CLOCKWISE ROTATION
VOLTAGES MEASURED WITH "VOLT-OHMYST" AND WITH NO SIGNAL INPUT. ALL VOLTAGES HOLD WITHIN ± 20% WITH 120 V. A-C SUPPLY.
* 10 MEGOHM, 1 MEGOHM, ½ WATT RESISTOR IN SERIES WITH METER PROBE
PM SPKR.
S1001 PNEUMATIC MASTER ON-OFF SW.
S1002 SPK. STEREO-MONO & A.M.-M.P.X. STAND-BY POS.
S1004 VOL. SW.
S1005 TUNER BAR
T101 OUTPUT TR.
T103 POWER TRANS.
J1004 STEREO JACK
J1005 SPKR.
J1006 PHONO JACK
K1001 RELAY
K1002 RELAY
TUNER
TUNER MOTOR
SR101 RECT.
SR102 RECT.
20V 60~ SUPPLY
120V 60~ SUPPLY

Figure 17—Circuit Schematic Diagram for Chassis KCS134A, B & C (Shown with KRS24C Remote Control Amplifier used with KCS134C Chassis)

SYMBOL NO.	STOCK NO.	DESCRIPTION
	109117	Rod—40.750 KC
	109118	Rod—43.250 KC
	109114	Shaft—(Pawl) lever shaft
	73117	Socket—Tube for V1001
	100474	Socket—Tube for V1002, V1003, V1004
	109115	Spring—Pawl lever
		CHASSIS ASSEMBLIES KCS134A, B & C
		CAPACITORS
C103	———	Paper—.015 mf., ±20%, 600 v.
C105	———	Paper—0.1 mf., ±20%, 400 v.
C107	———	Paper—.022 mf., ±10%, 600 v.
C108	———	Paper—820 mmf., ±10%, 2000 v.
C109	106602	Ceramic—680 mmf., ±10%, 2000 v.
C111	102882	Ceramic—47 mf., ±10%, 500 v.
C112	104891	Ceramic—390 mf., ±10%, 2000 v.
C113	———	Paper—.047 mmf., ±20%, 600 v.
C114	———	(Part of yoke).
C117	———	Paper—.47 mf., ±20%, 200 v.
C118A, B, C	107471	Electrolytic, 150/10/200 mmf.. 200/350/25 v.
C119A, B, C, D	109173	Electrolytic, 100/10/20/20 mmf., 350/350/350/25 v.
C121	———	Ceramic—1000 mmf., ±20%, 1000 v.
C122	105674	Ceramic—100 mmf., ±10%, 500 v.
C123	———	Mica—680 mmf., ±10%, 500 v., Char. D, E, or F
C139	107472	Electrolytic, 150 mf., +100 —10%, 200 v.
C153	77252	Ceramic—.001 mf., +100 —0%, 500 v.
C201	102415	Ceramic—3 mmf., ±1 mmf., 1000 v.
C202	———	(Part of T201)
C203	———	(Part of CPR201)
C204	———	(Part of CPR202)
C205, C206	———	(Part of T202)
C207	———	(Part of PC201)
C208	102234A	Ceramic—.001 mf., ±20%, 500 v.
C209	73960	Ceramic—.01 mf., +100 —0%, 500 v.
C210	109060	Ceramic—.0039 mf., ±10%, 1000 v.
C212	104131	Ceramic—.0027 mf., ±10%, 500 v.
C213	———	(Part of PC201)
C214	———	(Part of T203)
C215	———	Paper—.047 mf., ±20%, 200 v.
C216	———	Paper—.22 mf., ±20%, 600 v.
C217	109061	Ceramic—9.5 mmf., ±.50 mmf., 500 v.
C218	105300	Ceramic—100 mmf., ±5%, 500 v.
C219, C220	77252	Ceramic—.001 mf., +100 —0%, 500 v.
C221	102230	Ceramic—470 mmf., ±20%, 500 v.
C222, C223	———	(Part of PC202)
C224	102234A	Ceramic—.001 mf., ±20%, 500 v.
C225	73473	Ceramic—.0047 mf., +100 —0%, 500 v.
C227	102230	Ceramic—470 mmf., ±20%, 500 v.
C228	102234A	Ceramic—.001 mf., ±20%, 500 v.
C229, C230	104178	Ceramic—5 mmf., ±0.5 mmf., 500 v.
C231	———	(Part of CPR203)
C232	103245	Ceramic—12 mmf., ±10%, 500 v.
C234	———	Paper—.0068 mf., ±10%, 400 v.
C235	———	Paper—.0033 mf., ±10%, 600 v.
C236	———	(Part of PC203)
C238, C239	102234A	Ceramic—.001 mf., ±20%, 500 v.
C501	102230	Ceramic—470 mmf., ±10%, 500 v.
C502	———	Paper—.022 mf., ±20%, 200 v.
C503	———	Paper—.47 mf., ±20%, 200 v.
C504	105348	Ceramic—33 mmf., ±10%, 500 v.
C505	———	Paper—.033 mf., ±20%, 400 v.
C506	104144	Mica—220 mmf., ±10%, 500 v.
C508	———	Paper—.0047 mf., ±10%, 600 v.
C509	———	(Part of PC502)
C510	105672	Mica—470 mmf., ±5%, 1000 v.
C511	———	Ceramic—18 mmf., ±10%, 500 v., N750
C513	———	Mica—680 mmf., ±10%, 500 v., Char. D, E, or F
C515	———	Paper—.01 mf., ±10%, 400 v.
C517	———	Paper—0.1 mf., ±10%, 600 v.
C518	———	Paper—.018 mf., ±10%, 600 v.
C519	———	Paper—.0047 mf., ±10%, 600 v.
C520	107735	Paper—0.1 mf., ±20%, 600 v.
C521	———	Paper—.068 mf., ±10%, 400 v.
C523	———	Paper—.047 mf., ±20%, 400 v.
C524	———	(Part of CPR501)
C525	———	(Part of PC502)
C526	———	(Part of PC503)
C527	———	(Part of CPR502)
C530	———	Paper—.0039 mf., ±10%, 600 v.
C531, C532	———	(Part of PC502)
CPR201	104329	Circuit—Printed sound I.F. grid circuit (includes C203, R201)
CPR202	107278	Circuit—Printed sound I.F. cathode component (includes C204, R202)
CPR203	109320	Circuit—Printed 3rd pix I.F. cathode component circuit (includes C231, R225)
CPR501	107283	Circuit—Printed component (includes C524, R538)
CPR502	107492	Circuit—Printed component (includes C527, R513)
CR201	76675B	Rectifier—Crystal rectifier
F101	104295	Fuse—Surge limiter
F102, F103	———	Fuse—#28 AWG
J104	51388	Connector—Jack for stereo for 191BR254
L101	105522	Coil—Width
L102, L103	107385	Choke—R.F.
L104	100286	Choke—Filter
L105 to L108	———	(Part of yoke)
L201, L202	73477	Coil—Filament choke
L204	101819	Coil—Peaking
L205	101287	Coil—Peaking
L206	105516	Coil—Peaking
L207	104230	Coil—Peaking
L208	109171	Coil—R.F. choke
L501	107284	Coil—Horizontal frequency and sine wave
PC201	107276	Circuit—Printed sound I.F. component circuit (includes C207, C213, R204, R205, R207)
PC202	107277	Circuit—Printed pix I.F. component circuit (includes C222, C223, R218, R220, R221, R223, R224)
PC203	107200	Circuit—Printed sync. grid component circuit (includes C236, R240, R241, R242)
PC501	107280	Circuit—Printed component (includes R508, R509, R511, R528, R530, R531, R532, R533)
PC502	109536	Circuit—Printed component (includes C509, C525, C531, C532, R522, R548, R549)
PC503	109537	Circuit—Printed component (includes C526, R544)
PW200	109538	Circuit—Printed pix and sound I.F. circuit less tubes for KCS134A & B chassis
PW200	109539	Circuit—Printed pix and sound I.F. circuit less tubes for KCS134C chassis
PW500	109535	Circuit—Printed deflection strip less tubes
		RESISTORS
		Fixed, Composition—Unless Otherwise Specified:
R101	103352	2200 ohms, ±10%, 4 w.
R102	109528	Control—On-off/volume (KCS134A & B)
R102	109529	Control—Volume-remote (KCS134C)
R104	109177	Control—Vertical hold
R105	———	47 ohms, ±20%, ½ w.
R106	213756	10,000 ohms, ±10%, 3w.
R109	———	150,000 ohms, ±20%, ½ w.
R110	102789A	2700 ohms, ±10%, 7 w.
R111	———	1800 ohms, ±10%, 2 w.
R112	109176	Control—Brightness
R114	———	220,000 ohms, ±10%, ½ w.
R115	———	4700 ohms, ±20%, ½ w.
R116	———	2.2 megohms, ±20%, ½ w.
R117, R118	———	(Part of yoke)
R119	104382	Wire wound, 1 ohm, ±10%, ½ w.
R120	109530	Control—Horizontal hold
R122	———	18,000 ohms, ±10%, 2 w.
R123	107191	120 ohms, cold, +50 —25%
R124	———	(Part of yoke)
R127	109301	Control—Contrast
R131	———	1.8 megohms, ±10%, ½ w.
R132	———	3.9 megohms, ±10%, ½ w.
R133	———	470,000 ohms, ±10%, ½ w.

SYMBOL NO.	STOCK NO.	DESCRIPTION
R134	———	4700 ohms, ±10%, ½ w.
R150	107292	330 ohms, ±10%, 4 w.
R159	———	2.2 megohms, ±10%, ½ w.
R160	———	150,000 ohms, ±10%, ½ w. for 191BR254
R201	———	(Part of CPR201)
R202	———	(Part of CPR202)
R203	———	100,000 ohms, ±10%, ½ w.
R204, R205	———	(Part of PC201)
R207	———	(Part of PC201)
R209	———	560,000 ohms, ±10%, ½ w.
R210	———	1500 ohms, ±10%, 1 w.
R211	———	(Part of T203)
R212	———	470,000 ohms, ±20%, ½ w.
R213	———	470 ohms, ±10%, ½ w.
R214	———	10,000 ohms, ±5%, ½ w.
R215	———	3900 ohms, ±5%, ½ w.
R216	———	1000 ohms, ±20%, ½ w.
R217	———	56 ohms, ±5%, ½ w.
R218	———	(Part of PC202)
R220, R221	———	(Part of PC202)
R222	———	12 ohms, ±5%, ½ w.
R223, R224	———	(Part of PC202)
R225	———	(Part of CPR203)
R226	———	470 ohms, ±10%, ½ w.
R227	———	3900 ohms, ±5%, ½ w.
R228	106975	8200 ohms, ±10%, 7 w.
R230	———	120,000 ohms, ±10%, ½ w.
R231	———	6800 ohms, ±10%, ½ w.
R232	———	150,000 ohms, ±20%, ½ w.
R234	———	330 ohms, ±20%, ½ w.
R235	———	33,000 ohms, ±10%, ½ w.
R236	———	27 ohms, ±10%, ½ w.
R237	———	68,000 ohms, ±10%, ½ w.
R238	———	47,000 ohms, ±10%, ½ w.
R239	———	10,000 ohms, ±10%, ½ w.
R240, R241, R242	———	(Part of PC203)
R251	———	6800 ohms, ±5%, ½ w.
R252	———	18,000 ohms, ±5%, ½ w.
R501	———	1800 ohms, ±10%, ½ w.
R502	———	100,000 ohms, ±10%, ½ w.
R503	———	220,000 ohms, ±20%, 1 w.
R504	———	2.2 megohms, ±10%, ½ w.
R505	———	180,000 ohms, ±10%, ½ w.
R508, R509 R511	———	(Part of PC501)
R512	———	560,000 ohms, ±10%, ½ w.
R513	———	(Part of CPR502)
R514	———	3300 ohms, ±5%, ½ w.
R515	———	220,000 ohms, ±5%, ½ w.
R516	———	100,000 ohms, ±10%, ½ w.
R517	———	100,000 ohms, ±10%, ½ w.
R518	———	68,000 ohms, ±5%, ½ w.
R519	———	1.0 megohm, ±10%, ½ w.
R520	———	10,000 ohms, ±10%, 1 w.
R521	———	2200 ohms, ±10%, ½ w.
R522	———	(Part of PC502)
R523	———	33,000 ohms, ±10%, ½ w.
R525	———	6.8 megohms, ±10%, ½ w.
R526	———	82,000 ohms, ±10%, 1 w.
R528	———	(Part of PC501)
R530 to R533	———	(Part of PC501)
R534	———	27,000 ohms, ±5%, ½ w.
R537	———	3300 ohms, ±20%, ½ w.
R538	———	(Part of CPR501)
R539	———	1000 ohms, ±20%, ½ w.
R540	———	27,000 ohms, ±10%, 1 w.
R541	———	1.2 megohms, ±10%, ½ w.
R542	———	6.8 megohms, ±10%, ½ w.
R544	———	(Part of PC503)
R548, R549	———	(Part of PC502)
SR101, SR102	———	Rectifier—Silicon RCA type 1N1763
T101	109067	Transformer—Audio
T102	109068	Transformer—Hi-voltage
T103	109069	Transformer—Power
T104	109066	Transformer—Vertical output
T201	104136	Transformer—Sound take off (includes C202)
T202	107201	Transformer—Driver (includes C205, C206)
T203	105795	Coil—Ratio detector (includes C214, R211)
T204	107202	Transformer—I.F. pix
T205	107203	Transformer—1st I.F. grid trap
T206	109071	Transformer—1st I.F. pix
T207	109158	Transformer—2nd I.F. pix
T208	109076	Transformer—3rd I.F. pix
T209	104903	Coil—4.5 MC trap

MISCELLANEOUS

109139	Antenna—Telescoping (rod) (VHF)
107261	Antenna—UHF (ring) for 191B242U, 244U, 255U, 256U, 257U
109499	Back—Back cover, tuskon ivory, phenolic, for all models except 191BR254
109500	Back—Back cover, tuskon ivory, phenolic, for 191BR254
109503	Balun—Antenna impedence matching, for 191B242, 244 & U
Z4806	Cabinet—Autumn mahogany, roller grain, for 191B255 & U
Z4807	Cabinet—Ribbon walnut, roller grain, for 191B256 & U
Z4808	Cabinet—Toast oak, roller grain, for 191B-257 & U
Z4804	Cabinet—Black, for 191B242 & U
Z4805	Cabinet—Tuskon ivory, for 191B244 & U
Z4809	Cabinet—Tuskon ivory, for 191BR254
106976	Cable—Power
107723	Cable—R.F. link
109058	Cap—For H.V. rect. tube
109519	Clip—Clip for mask and escutcheon spring steel on 191BR254
107186	Clip—Clip for C119 capacitor
107329	Clip—Clip for H.V. shield
109138	Clip—Interlock for power cord
109521	Clip—Spring clip for mask
105056	Connector—Female, speaker connector
100029	Connector—2 contact male, power input
109064	Cover—Cover assy. for L204, L205, T208
109131	Dial—UHF, phenolic, clear, for 191B255U, 256U, 257U
109506	Escutcheon—Aluminum, nickel silver, fine tuning, contrast, on-volume, for 191B255, 256, 257
109509	Escutcheon—Aluminum, nickel silver, fine tuning, contrast, on-volume, for 191B255U, 256U, 257U
109508	Escutcheon—Aluminum, red brass, fine tuning, contrast, on-volume, for 191B244 & U
109505	Escutcheon—Aluminum, red brass, fine tuning, contrast, on-volume, for 191B244
109504	Escutcheon—Aluminum, black, fine tuning, contrast, on-volume, for 191B242
109507	Escutcheon—Aluminum, black, fine tuning, contrast, on-volume, for 191B242U
109526	Escutcheon—Channel selector, fine tuning, contrast, vol. brass, for 191BR254
109517	Escutcheon—Remote, aluminum, antique bronze, for 191BR254
109512	Escutcheon—Speaker, aluminum, antique bronze, for 191B244
109513	Escutcheon—Speaker, aluminum, antique bronze, for 191B244U
109510	Escutcheon—Speaker, aluminum, black, for 191B242
109511	Escutcheon—Speaker, aluminum, black, for 191B242U
109514	Escutcheon—Speaker, aluminum, champagne gold, for 191B244, 256, 257
109515	Escutcheon—Speaker, aluminum, champagne gold, for 191B255U, 256U, 257U
103685	Foot—Mounting foot
109099	Grommet—High voltage compartment
71851	Grommet—Remote control microphone mounting for 191BR254
109520	Handle—Carrying, zinc die cast brass for 191B255, 256, 257 & U, 191BR254
107691	Handle—Carrying handle, plastic, ivory, only stocked for 191B242, 244 & U
101526	Jack—Telephone, external speaker for 191-BR254
107265	Knob—Brightness, horizontal and vertical for 191B242, 244 & U
109128	Knob—Channel selector and UHF, zinc die cast for 191B255U, 256U, 257U

SYMBOL NO.	STOCK NO.	DESCRIPTION
		TMA18A VHF TUNER MOUNTING ASSEMBLY (Includes KRK87AC Tuner Assembly Listed Below—Refer to Page 2 for Cross-Reference Information) *(Refer to Figure 13)*
B1001	109404	Motor—115 v, 60 CPS
C1050	———	Capacitor—Paper, .047 mf., ±20%, 600 v.
C1052	———	Capacitor—Paper, .033 mf., ±20%, 200 v.
P1050	103710	Connector—4 contact male, power
P1051	109440	Connector—2 contact male, motor
R1050	106074	Resistor—Fixed wire wound, 4700 ohms, ±10%, 7 w.
S1001	109217	Switch—Off-on pneumatic master switch bellows and support assembly
S1002	109413	Switch—Channel selector actuating
S1003	109541	Switch—Motor on-off touch bar
	109153	Bar—Remote motor touch bar
	109403	Cam—Bellows actuating cam
	109542	Dial—Channel selector dial, blue acetate
	107799	Gear—Fine tuning shaft drive gear
	109146	Pin—Touch bar pivot
	109427	Shaft—Fine tuning shaft and gear
	102310	Socket—Pilot lamp socket and lead
	74734	Spring—Cam and dial retaining spring clip
	107969	Spring—Tension for fine tuning intermediate
	109147	Spring—Touch bar torsion
	109373	Stud—Adjusting stud
		KRK87AC VHF TUNER ASSEMBLY
		CAPACITORS
C7	107877	Ceramic—28 mmf., ±10%, N750, 500 v.
C8	109218	Variable Ceramic—5-3 mmf.
C9	107879	Feed thru, 100 mmf., ±5%, 500 v.
C10	107877	Ceramic—28 mmf., ±10%, N750, 500 v.
C11	107880	Ceramic—33 mmf., 500 v., N750
C12	109218	Variable Ceramic—5-3 mmf.
C13	107885	Ceramic—1000 mmf., GMV, 500 v.
C14	109424	Ceramic—7.25 mmf., +.5-.25 mmf., N80, 500 v.
C15	107884	Ceramic—18 mmf., ±10%, N220, 500 v.
C16	107887	Ceramic—39 mmf., ±5%, N750, 500 v.
C17	107878	Feed thru, 1000 mmf., GMV
C18	107881	Feed thru, 40 mmf.
C19, C20	107876	Feed thru, 1000 mmf., GMV
C21	107886	Trimmer—1.8-7.0 mmf.
C22	107876	Feed thru, 30 mmf., ±7½ %, 750 v.
C23 to C26	107875	Ceramic—27 mmf., ±10%, N750, 500 v. (Part of T1)
C27	107878	Feed thru, 1000 mmf., GMV
C28	109425	Ceramic—75 mmf., ±10%, 500 v.
L5 to L8	———	(Part of channel inserts)
L9	107888	Coil—Fine tuning coil less core
L10	———	Coil—Screen grid
L11	107889	Coil—I.F.
L12	———	Coil—Part of T1
L13	———	Coil—Part of T1
L14	———	Coil—Part of T1
		RESISTORS **Fixed, Composition—Unless Otherwise Specified:**
R2	107895	47 ohms, ±10%, ½ w.
R3	107890	47,000 ohms, ±20%, ¼ w.
R4	107892	2700 ohms, ±10%, ¼ w.
R5	———	1000 ohms, ±20%, ½ w.
R6	107893	220,000 ohms, ±20%, ¼ w.
R7	107894	4700 ohms, ±20%, ¼ w.
R9	107891	1000 ohms, ±20%, ¼ w.
R10	107894	4700 ohms, ±20%, ¼ w.
T1	107896	Network—VHF antenna input assembly
		MISCELLANEOUS
	107897	Ball—Detent
	107920	Board—Stator board and mounting bracket assembly
	107911	Bracket—Fine tuning coil mounting
	109152	Cam—Fine tuning cam (phenolic)
	109155	Cam—Selector cam (nylon)
	107918	Core—Channel insert tuning core
	107902	Core—Fine tuning core and grommet
	109573	Detent—Channel selector detent complete
	107898	Insert—Channel #2
	107899	Insert—Channel #3
	107900	Insert—Channel #4
	107901	Insert—Channel #5
	107902	Insert—Channel #6
	107903	Insert—Channel #7
	107904	Insert—Channel #8
	107905	Insert—Channel #9
	107906	Insert—Channel #10
	107907	Insert—Channel #11
	107908	Insert—Channel #12
	107909	Insert—Channel #13
	109575	Lever—Fine tuning lever
	109576	Retainer—Detent shaft
	107919	Spring—Channel selector detent shaft front retaining (formed)
	109576	Spring—Channel selector detent shaft rear retaining (formed)
	109574	Spring—Fine tuning lever tension
	107459	Washer—Spring grip, for fine tuning drive gear tension
		TMA19A VHF TUNER MOUNTING ASSEMBLY (Include KRK96P VHF Tuner Assembly Listed Below—Refer to Page 2 for Cross-Reference Information) *(Refer to Figure 13)*
		KRK96P VHF TUNER ASSEMBLY
		CAPACITORS
C1 to C4	109348	Ceramic—27 mmf., ±5%, 500 v. (Part of antenna matching assembly)
C5	105660	Feed thru, 1000 mmf.
C6	109372	Circuit—Capacitor-resistor comb., 27 mmf., ±20%, 500 v. (Includes R2)
C7	107875	Ceramic—27 mmf., ±10%, 500 v.
C8	105507	Trimmer—.34 to 1.9 mmf.
C9	109377	Variable, Ceramic—2 to 10 mmf.
C10	109351	Feed thru, 82 mmf.
C11	107297	Ceramic—33 mmf., ±10%, 500 v. (Part of S1D)
C12	109352	Feed thru, 47 mmf.
C13	104052	Trimmer—.5 to 3.0 mmf.
C14	105660	Feed thru, 1000 mmf.
C15	79992	Ceramic—2.0 mmf., ±.25%, 500 v. (Part of S1A)
C17	76350	Ceramic—10 mmf., ±.5 mmf., 500 v.
C18	76350	Ceramic—10 mmf., ±.5 mmf., 500 v. (Part of S1A)
C19	107232	Ceramic—39 mmf., ±10%, 500 v.
C20	105660	Feed thru, 1000 mmf.
C21, C22	77624	Ceramic—680 mmf., +100 —0%, 500 v.
C23	105660	Feed thru, 1000 mmf.
C24	105660	Feed thru, 1000 mmf.
C25	104224	Ceramic—68 mmf., ±10%, 500 v. (Part of S1A)
J1	107588	Connector—Single contact female I.F. output (Part of Ant. Matching Network)
L1 to L3	———	(Part of S1D)
L4	———	Form—Coil form and core assembly (Part of S1C)
L5	103558	(Part of Hi-Band Coupling Adj.)
L6, L7	———	Form—Coil form and core assembly (Part of S1B)
L8	103558	Form—Coil form and core assembly (Part of S1A)
L9	———	Coil—R.F. filter
L10	109345	Form—Coil form and core assembly (Part of S1A)
L11 to L15	———	(Part of S1D)
L16 to L26	———	(Part of S1C)
L27	———	(Part of Low band coupling adj.)
L28 to L37	———	(Part-of S1B)
L38	———	(Part of Low band coupling adj.)
L39 to L49	———	(Part of S1A)
L50	109374	Coil—Mixer plate
L51 to L57	———	(Part of S1D)
L58	———	Coil—Filament
		RESISTORS **Fixed, Composition—Unless otherwise Specified:**
R1	———	47,000 ohms, ±20%, ½ w.
R2	109372	Circuit—47 ohms, ±20%, ½ w.—res. cap. comb. includes C6
R3	———	2700 ohms, ±10%, ½ w. (Part of S1D)
R4	———	10,000 ohms, ±10%, ½ w. (Part of S1B)
R5	———	1000 ohms, ±20%, ½ w.
R6	———	5600 ohms, ±10%, ½ w.
R7	———	220,000 ohms, ±10%, ½ w.
R9	———	1000 ohms, ±20%, ½ w.
R10	———	8200 ohms, ±10%, ½ w.
R11	106253	8200 ohms, ±10%, 3 w.
R12	———	33,000 ohms, ±10%, 1 w.
R13	———	39,000 ohms, ±10%, 2 w.
R15	———	80 ohms, ±10%, ½ w.
S1A	109365	Stator—Oscillator complete
S1B	109359	Stator—Mixer complete
S1C	109361	Stator—R.F. complete
S1D	109363	Stator—Antenna complete
		MISCELLANEOUS
	77579	Ball—Detent plate
	106191	Cam—Fine tuning cam assembly
	109103	Detent—Detent plate
	107179	Gear—Diecast, fine tuning
	107180	Gear—Fine tuning, intermediate
	109364	Network—Transformer ant. matching assy.
	109379	Nut—Spring #2-436 (For C9 capacitor)
	104061	Screw—Stator, 2-40 x 7/16" .187 head
	109355	Screw—Stator #4-40 thread 5/16" long .250 head
	109380	Screw—Mach. fillister head—slotted #4-36 x .75 (For C9 capacitor)
	109553	Shaft—Detent
	109554	Shaft—Fine tuning shaft and gear assembly
	107968	Socket—Tube, 7 pin for V1
	106044	Socket—Tube, 9 pin for V2
	104947	Spring—Cam shaft spring
	72845	Spring—Fine tuning shaft retaining
	100023	Spring—Stator shield retaining
	107370	Terminal—Test point
	76221	Washer—"C" type, for fine tuning gear
	204043	Washer—"C" type, for retaining fine tuning intermediate gear
	78651	Washer—"C" type, for retaining fine tuning shaft
	103522	Washer—Spring, for fine tuning gear
	107181	Washer—Spring retaining, fine tuning intermediate gear
	107459	Washer—Spring grip, for fine tuning gear
		TMA19B UHF/VHF TUNER MOUNTING ASSEMBLY (Includes KRK97P VHF Tuner Assembly with KRK66AE UHF Tuner Assembly Listed Below—Refer to Page 2 for Cross-Reference Information) *(Refer to Figure 13)*
C1050	———	Capacitor—Paper, .047 mf., ±20%, 600 v.
C1052	———	Capacitor—Paper, .033 mf., ±20%, 200 v.
P1050	103710	Connector—4 contact male, power
R1050	———	Resistor—Fixed comp., 820 ohms, ±10%, 1 w.
R1052	106635	Resistor—Fixed film, 15,000 ohms, ±10%, 4 w.

SYMBOL NO.	STOCK NO.	DESCRIPTION
		KRK97P VHF TUNER ASSEMBLY
		CAPACITORS
C1 to C4	109348	Ceramic—27 mmf., ±5%, 500 v.
C5	105660	Feed thru, 1000 mmf.
C6	109372	Circuit—capacitor — res. comb., 27 mmf., ±20%, 500 v. (includes R2)
C7	107875	Ceramic—27 mmf., ±10%, 500 v.
C8	105507	Trimmer—.34 to 1. mmf.
C9	109377	Variable—Ceramic, 2 to 10 mmf.
C10	109351	Feed thru, 82 mmf.
C11	107297	Ceramic—33 mmf., ±10%, 500 v. (Part of S1D)
C12	109352	Feed thru, 47 mmf.
C13	104052	Trimmer—.5 to 3.0 mmf.
C14	105660	Feed thru, 1000 mmf.
C15	79992	Ceramic—2.0 mmf., ±.25%, 500 v. (Part of S1A)
C16	106740	Ceramic—1.2 mmf., ±.25 mmf., 500 v.
C17	76350	Ceramic—10 mmf., ±.5 mmf., 500 v.
C18	———	(Part of S1A)
C19	109349	Ceramic—10 mmf., ±10%, 500 v.
C20	105660	Feed thru, 1000 mmf.
C21	102230	Ceramic—470 mmf., ±10%, 500 v.
C22	107232	Ceramic—38 mmf., ±10%, 500 v.
C23	107752	Ceramic—62 mmf., ±5%, 500 v.
C24 to C26	105660	Feed thru, 1000 mmf.
C27	77624	Ceramic—680 mmf., +100 —0%, 500 v.
C28	109350	Headed lead, 43 mmf., ±10%, 500 v.
C29, C30	105660	Feed thru, 1000 mmf.
J1, J2	107588	Connector—Single contact female I.F. output (Part of Ant. matching network)
L1 to L3	———	(Part of S1D)
L4	———	Form—Coil form and core assembly (Part of S1C)
L5	103558	(Part of Hi-Band coupling adj.)
L6, L7	———	Form—Coil form and core assembly (Part of S1B)
L8	103558	Coil—Mixer
L9	———	Form—Coil form and core assembly (Part of S1A)
L10	109345	(Part of S1D)
L11 to L15	———	(Part of S1C)
L16 to L26	———	(Part of Low band coupling adj.)
L27	———	Form—Coil form and core assembly (Part of S1B)
L28	109346	Coil—R.F. choke
L29 to L38	———	(Part of S1B)
L39 to L49	———	(Part of S1A)
L50	104437	Coil—I.F. inter stage
L51	109375	Coil—Mixer plate
L52 to L58	———	(Part of S1D)
L59 to L60	———	Coil—Filament
L61	———	(Part of low band coupling adj.)
L62	107975	Reactor—Filter with R14
		RESISTORS **Fixed, Composition—Unless Otherwise Specified:**
R1	———	47,000 ohms, ±10%, ½ w.
R2	109372	Circuit—47 ohms, ±20%, ½ w.—res. cap. comb. (includes C6)
R3	———	2700 ohms, ±10%, ½ w.
R4	———	100,000 ohms, ±20%, ½ w.
R5	106253	8200 ohms, ±10%, 3 w.
R6	———	10,000 ohms, ±10%, ½ w.
R7	———	220,000 ohms, ±10%, ½ w.
R8	———	1000 ohms, ±20%, ½ w.
R9	———	100,000 ohms, ±10%, ½ w.
R10	———	15 ohms, ±20%, ½ w.
R11	———	68,000 ohms, ±10%, ½ w.
R12	———	18 ohms, ±5%, ½ w.
R13	———	1000 ohms, ±20%, ½ w.
R14	107975	Reactor—Filter with L62
R17	———	18 ohms, ±10%, ½ w.
R18	———	39,000 ohms, ±10%, 2 w.
S1A	109368	Stator—Oscillator complete
S1B	109360	Stator—Mixer complete
S1C	109362	Stator—R.F. complete

SYMBOL NO.	STOCK NO.	DESCRIPTION
S1D	103363	Stator—Antenna complete
T2	103668	Coil—I.F. input coil assembly, UHF
		MISCELLANEOUS
	77579	Ball—Detent plate
	106191	Cam—Fine tuning cam assembly
	109103	Detent—Detent plate
	107179	Gear—Diecast, fine tuning
	107351	Gear—Phenolic, fine tuning intermediate
	109364	Network—Transformer ant. matching assy.
	109379	Nut—Spring #4-36 (Part of C9 capacitor)
	109380	Screw—Mach., fillister head-slotted #4-36 x .75 (Part of C9 capacitor)
	109553	Shaft—Detent shaft
	109554	Shaft—Fine tuning shaft and gear assembly
	104059	Shield—For mixer plate transformer
	107968	Socket—Tube, 7 pin for V1
	106044	Socket—Tube, 9 pin for V2
	104944	Spring—Cam shaft retaining
	72845	Spring—Fine tuning shaft retaining
	100023	Spring—Stator shield retaining
	107370	Terminal—Test point
	76221	Washer—"C" type, for fine tuning gear
	204043	Washer—"C" type, for retaining fine tuning intermediate gear
	78651	Washer—"C" type, for retaining fine tuning shaft
	103522	Washer—Spring, for fine tuning gear
	107181	Washer—Spring retaining, fine tuning intermediate gear
	107459	Washer—Spring grip, for fine tuning gear
		KRK66AE UHF TUNER ASSEMBLY
		CAPACITORS
C801	———	Antenna trimmer
C802A	———	Antenna section of tuning
C802B	———	Mixer section of tuning
C802C	———	Oscillator section of tuning
C803	———	Mixer trimmer
C805	106688	Ceramic—18 mmf., ±10%, 500 v.
C806	106689	Feed thru, 1000 mmf., 500 v.
C807	106689	Feed thru, 1000 mmf., 500 v.
C808	106694	Ceramic—37 mmf., ±10%, 600 v.
C809	103998	Variable mica—0.5-3.5 mmf., 500 v.
C810	106691	Ceramic—1.5 mmf., ±.25 mmf., T.C. N1400, 500 v.
C811, C812	104917	Ceramic—0.5 mmf., ±.1 mmf., T.C. N750, 500 v.
C813	———	High frequency osc. trimmer
C815	106689	Feed thru, 1000 mmf., 500 v.
C816	107730	Ceramic—39 mmf., ±10%, 500 v.
C8801	107729	Rectifier—Crystal diode
J801	104039	Connector—Single contact female connector
L801	———	Reactor—Antenna coupling loop
L802	———	Reactor—Antenna tank inductor
L803	———	Reactor—Mixer tank inductor
L804	———	Reactor—Oscillator coupling loop
L805	———	Reactor—I.F. coil
L806	———	Reactor—Filament choke coil
L807	106695	Coil—Cathode choke (includes R4)
L808	———	Reactor—Oscillator tank inductor
L809	———	Reactor—Filament choke coil
		RESISTORS **Fixed, Composition—Unless Otherwise Specified:**
R801	———	15 ohms, ±10%, ½ w.
R802	———	5600 ohms, ±10%, ½ w.
R803	———	100 ohms, ±20%, ½ w.
R804	106695	12,000 ohms, ±5%, ½ w. (includes L807)
		MISCELLANEOUS
	109083	Plate—Main drive gear shaft mounting
	107176	Shaft—Main tuner drive assembly complete
	106693	Socket—Tube socket and shield 7 pin miniature
	106495	Spring—Drive shaft retaining formed
	106496	Spring—Return spring for stop lever
	106686	Tuner—R.F. tuning unit less gears UHF (KRK66AE)

SYMBOL NO.	STOCK NO.	DESCRIPTION
		KRT1B REMOTE CONTROL TRANSMITTER (2 Button)
	109123	Bezel—Bezei assembly
	109120	Button—Channel off
	109121	Button—Volume
	109125	Case—Bottom
	109112	Case—Case assembly top
	109119	Clip—Rod clip
	109113	Lever Assembly—Pawl lever
	109117	Rod—40.750 KC rod
	109118	Rod—43.250 KC rod
	109114	Shaft—Pawl lever shaft
	109115	Spring—Pawl lever spring
	109116	Support Assembly—Hammer support
		KRS24C REMOTE CONTROL AMPLIFIER (2 Button)
		CAPACITORS
C1001	———	Paper—.1 mf., ±20%, 400 v.
C1002	105301	Ceramic—330 mmf., ±20%, 500 v.
C1003	———	Paper—.47 mf., ±20%, 200 v.
C1005, C1006	105245	Ceramic—120 mmf., ±20%, 500 v.
C1007	———	Paper—.22 mmf., ±20%, 400 v.
C1004	102558	Ceramic—150 mmf., 500 v.
C1008	———	Paper—.47 mf., ±20%, 200 v.
C1009	———	Paper—.033 mf., ±20%, 200 v.
R1010, R1011	94667	Electrolytic, 50 uf, +250 —10%, 25 v.
C1011	218468	Mica—680 mmf., ±20%, 500 v.
C1012, C1013, C1016	73960	Ceramic—.01 mf., +100 —0%, 500 v.
C1017	———	Paper—.01 mf., ±.500 v.
C1014	———	Paper—.01 mf., ±.500 v.
C1015	107542	Mica—680 mmf., ±10%, 300 v.
C1018	———	Paper—.22 mmf., ±.400 v.
C1022	73960	Ceramic—.01 mf., +100 —0%, 500 v.
C1023	———	Paper—.047 mf., ±20%, 400 v.
J1001	51388	Connector—Female microphone
R1005	107405	Relay—Channel selector
L1002	109124	Relay—Volume control
L1001, L1002	107539	Coil—43.25 KC or 40.75 KC filter
		RESISTORS **Fixed, Composition—Unless Otherwise Specified:**
R1001, R1002	———	1 megohm, ±20%, ½ w.
R1003, R1004	———	100,000 ohms, ±20%, ½ w.
R1005	———	470,000 ohms, ± ½ w.
R1006	———	150,000 ohms, ± ½ w.
R1007	———	2200 ohms, ± ½ w.
R1008	———	5600 ohms, ± ½ w.
R1009, R1010, R1011	———	100,000 ohms, ±20%, ½ w.
R1013	———	270,000 ohms, ± ½ w.
R1014	———	39,000 ohms, ± 1 w.
R1015	———	2.2 megohms, ±20%, ½ w.
R1016	———	1 megohm, ±20%, ½ w.
R1017, R1018	———	2.2 megohms, ±20%, ½ w.
R1019	———	1 megohm, ±20%, ½ w.
R1020	———	12,000 ohms, ± ½ w.
R1021	———	18,000 ohms, ± ½ w.
R1022	———	2200 ohms, ± 1 w.
R1023, R1024	———	3.9 megohms, ±10%, ½ w.
		MISCELLANEOUS
	109123	Bezel—Assembly
	109120	Button—Channel off
	109121	Button—Volume
	109125	Case—Bottom
	109112	Case—Top phenolic
	109113	Lever—Pawl lever includes lever, pawl, spring, shaft

SYMBOL NO.	STOCK NO.	DESCRIPTION
	109117	Rod—40.750 KC
	109118	Rod—43.250 KC
	109114	Shaft—(Pawl) lever shaft
	73117	Socket—Tube for V1001
	100474	Socket—Tube for V1002, V1003, V1004
	109115	Spring—Pawl lever
		CHASSIS ASSEMBLIES KCS134A, B & C
CPR201	104329	Circuit—Printed sound I.F. grid circuit (includes C203, R201)
CPR202	107278	Circuit—Printed sound I.F. cathode component (includes C204, R202)
CPR203	109320	Circuit—Printed 3rd pix I.F. cathode component circuit (includes C231, R225)
CPR501	107283	Circuit—Printed component (includes C524, R538)
CPR502	107492	Circuit—Printed component (includes C527 R513)
CR201	76675B	Rectifier—Crystal rectifier
F101	104295	Fuse—Surge lmiter
F102, F103	———	Fuse—8 28 AWG
J104	51388	Connector—Jack for stereo for 191BR254
L101	105522	Coil—Width
L102, L103	107385	Choke—R.F
L104	100286	Choke—Filter
L105 to L108	———	(Part of yoke)
L201, L202	73477	Coil—Filament choke
L204	101819	Coil—Peaking
L205	101287	Coil—Peaking
L206	105516	Coil—Peaking
L207	104230	Coil—Peaking
L208	109171	Coil—R.F. choke
L501	107284	Coil—Horizontal frequency and sine wave
PC201	107276	Circuit—Printed sound I.F. component circuit (includes C207, C213, R204, R205, R207)
PC202	107277	Circuit—Printed pix I.F. component circuit (includes C222, C223, R218, R220, R221, R223, R224)
PC203	107200	Circuit—Printed sync grid component circuit (includes C236, R240, R241, R242)
PC501	107280	Circuit—Printed component (includes R508, R509, R511, R528, R530, R531, R532, R533)
PC502	109536	Circuit—Printed component (includes C509, C525, C531, C532, R522, R548, R549)
PC503	109537	Circuit—Printed component (includes C526, R544)
PW200	109538	Circuit—Printed pix and sound I.F. circuit less tubes for KCS134A & B chassis
PW200	109539	Circuit—Printed pix and sound I.F. circuit less tubes for KCS134C chassis
PW500	109535	Circuit—Printed deflection strip less tubes
		RESISTORS **Fixed, Composition—Unless Otherwise Specified:**
R101	103352	2200 ohms, ±10%, 4 w
R102	109528	Control—On-off/volume (KCS134A & B)
R102	109529	Control—Volume-remote (KCS134C)
R104	109117	Control—Vertical hold
R105	———	47 ohms, ±20%, ½ w
R106	213756	10,000 ohms, ±10%, 3w
R109	———	150,000 ohms, ±20%, ½ w.
R110	102789A	2700 ohms, ±10%, 7 w
R111	———	1800 ohms, ±10%, 2 w.
R112	109176	Control—Brightness
R114	———	220,000 ohms, ±10%, ½ w.
R116	———	4700 ohms, ±20%, ½ w.
R117, R118	———	2.2 megohms, ±10%, ½ w. (Part of yoke)
R119	104382	Wire wound, 1 ohm, ±10%, ½ w
R120	109530	Control—Horizontal hold
R122	———	18,000 ohms, ±10%, 2 w.
R123	107191	120 ohms, cold, +50 —25% (Part of yoke)
R124	———	Paper—.01 mf., ±10%, 400 v.
R127	109301	Control—Contrast
R131	———	1.8 megohms, ±10%, ½ w.
R132	———	3.9 megohms, ±10%, ½ w.
R133	———	470,000 ohms, ±10%, ½ w.
C521	———	Paper—.068 mf., ±10%, 400 v
C523	———	Paper—.047 mf., ±20%, 400 v
C524	———	(Part of CPR501)
C525	———	(Part of R502)
C526	———	(Part of PC503)
C527	———	(Part of CPR502)
C530	———	Paper—0039 mf., ±10%, 600 v
C531, C532	———	(Part of R502)
CPR202	107278	Circuit—Printed sound I.F. cathode component (includes C204, R202)
CPR203	109320	Circuit—Printed 3rd pix I.F. cathode component circuit (includes C231, R225)
CPR501	107283	Circuit—Printed component (includes C524, R538)
CPR502	107492	Circuit—Printed component (includes C527 R513)
CR201	76675B	Rectifier—Crystal rectifier
F101	104295	Fuse—Surge lmiter
F102, F103	———	Fuse—8 28 AWG
J104	51388	Connector—Jack for stereo for 191BR254
L101	105522	Coil—Width
L102, L103	107385	Choke—R.F
L104	100286	Choke—Filter
L105 to L108	———	(Part of yoke)
L201, L202	73477	Coil—Filament choke
L204	101819	Coil—Peaking
L205	101287	Coil—Peaking
L206	105516	Coil—Peaking
L207	104230	Coil—Peaking
L208	109171	Coil—R.F. choke
L501	107284	Coil—Horizontal frequency and sine wave
PC201	107276	Circuit—Printed sound I.F. component circuit (includes C207, C213, R204, R205, R207)
PC202	107277	Circuit—Printed pix I.F. component circuit (includes C222, C223, R218, R220, R221, R223, R224)
PC203	107200	Circuit—Printed sync grid component circuit (includes C236, R240, R241, R242)
PC501	107280	Circuit—Printed component (includes R508, R509, R511, R528, R530, R531, R532, R533)
PC502	109536	Circuit—Printed component (includes C509, C525, C531, C532, R522, R548, R549)
PC503	109537	Circuit—Printed component (includes C526, R544)
PW200	109538	Circuit—Printed pix and sound I.F. circuit less tubes for KCS134A & B chassis
PW200	109539	Circuit—Printed pix and sound I.F. circuit less tubes for KCS134C chassis
PW500	109535	Circuit—Printed deflection strip less tubes
		RESISTORS **Fixed, Composition—Unless Otherwise Specified:**
R101	103352	2200 ohms, ±10%, 4 w
R102	109528	Control—On-off/volume (KCS134A & B)
R102	109529	Control—Volume-remote (KCS134C)
R104	109117	Control—Vertical hold
R105	———	47 ohms, ±20%, ½ w
R106	213756	10,000 ohms, ±10%, 3w
R109	———	150,000 ohms, ±20%, ½ w.
R110	102789A	2700 ohms, ±10%, 7 w
R111	———	1800 ohms, ±10%, 2 w.
R112	109176	Control—Brightness
R114	———	220,000 ohms, ±10%, ½ w.
R116	———	4700 ohms, ±20%, ½ w.
R117, R118	———	2.2 megohms, ±10%, ½ w. (Part of yoke)
R119	104382	Wire wound, 1 ohm, ±10%, ½ w
R120	109530	Control—Horizontal hold
R122	———	18,000 ohms, ±10%, 2 w.
R123	107191	120 ohms, cold, +50 —25% (Part of yoke)
R124	———	Paper—.01 mf., ±10%, 400 v.
R127	109301	Control—Contrast
R131	———	1.8 megohms, ±10%, ½ w.
R132	———	3.9 megohms, ±10%, ½ w.
R133	———	470,000 ohms, ±10%, ½ w.

SYMBOL NO.	STOCK NO.	DESCRIPTION
	109117	Rod—40.750 KC
	109118	Rod—43.250 KC
	109114	Shaft—(Pawl) lever shaft
	73117	Socket—Tube for V1001
	100474	Socket—Tube for V1002, V1003, V1004
	109115	Spring—Pawl lever
		CHASSIS ASSEMBLIES KCS134A, B & C
		CAPACITORS
C103	———	Paper—.015 mf., ±20%, 600 v.
C105	———	Paper—0.1 mf., ±20%, 400 v.
C107	———	Paper—.022 mf., ±10%, 600 v.
C108	———	Paper—820 mmf., ±10%, 2000 v.
C109	106602	Ceramic—680 mmf., ±10%, 2000 v.
C111	102882	Ceramic—47 mf., ±10%, 500 v.
C112	104891	Ceramic—390 mf., ±10%, 2000 v.
C113	———	Paper—.047 mmf., ±20%, 600 v.
C114	———	(Part of yoke).
C117	———	Paper—.47 mf., ±20%, 200 v.
C118A, B, C	107471	Electrolytic, 150/10/200 mmf., 200/350/25 v.
C119A, B, C, D	109173	Electrolytic, 100/10/20/20 mmf., 350/350/350/25 v.
C121	———	Ceramic—1000 mmf., ±20%, 1000 v.
C122	105674	Ceramic—100 mmf., ±10%, 500 v.
C123	———	Mica—680 mmf., ±10%, 500 v., Char. D, E, or F
C139	107472	Electrolytic, 150 mf., +100 —10%, 200 v.
C153	77252	Ceramic—.001 mf., +100 —0%, 500 v.
C201	102415	Ceramic—3 mmf., ±1 mmf., 1000 v.
C202	———	(Part of T201)
C203	———	(Part of CPR201)
C204	———	(Part of CPR202)
C205, C206	———	(Part of T202)
C207	———	(Part of PC201)
C208	102234A	Ceramic—.001 mf., ±20%, 500 v.
C209	73960	Ceramic—.01 mf., +100 —0%, 500 v.
C210	109060	Ceramic—.0039 mf., ±10%, 1000 v.
C212	104131	Ceramic—.0027 mf., ±10%, 500 v.
C213	———	(Part of PC201)
C214	———	(Part of T203)
C215	———	Paper—.047 mf., ±20%, 200 v.
C216	———	Paper—.22 mf., ±20%, 600 v.
C217	109061	Ceramic—9.5 mmf., ±.50 mmf., 500 v.
C218	105300	Ceramic—100 mmf., ±5%, 500 v.
C219, C220	77252	Ceramic—.001 mf., +100 —0%, 500 v.
C221	102230	Ceramic—470 mmf., ±20%, 500 v.
C222, C223	———	(Part of PC202)
C224	102234A	Ceramic—.001 mf., ±20%, 500 v.
C225	73473	Ceramic—.0047 mf., +100 —0%, 500 v.
C227	102230	Ceramic—470 mmf., ±20%, 500 v.
C228	102234A	Ceramic—.001 mf., ±20%, 500 v.
C229, C230	104178	Ceramic—5 mmf., ±0.5 mmf., 500 v.
C231	———	(Part of CPR203)
C232	103245	Ceramic—12 mmf., ±10%, 500 v.
C234	———	Paper—.0068 mf., ±10%, 400 v.
C235	———	Paper—.0033 mf., ±10%, 600 v.
C236	———	(Part of PC203)
C238, C239	102234A	Ceramic—.001 mf., ±20%, 500 v.
C501	102230	Ceramic—470 mmf., ±10%, 500 v.
C502	———	Paper—.022 mf., ±20%, 200 v.
C503	———	Paper—.47 mf., ±20%, 200 v.
C504	105348	Ceramic—33 mmf., ±10%, 500 v.
C505	———	Paper—.033 mf., ±20%, 400 v.
C506	104144	Mica—220 mmf., ±10%, 500 v.
C508	———	Paper—.0047 mf., ±10%, 600 v.
C509	———	(Part of PC502)
C510	105672	Mica—470 mmf., ±5%, 1000 v.
C511	———	Ceramic—18 mmf., ±10%, 500 v., N750
C513	———	Mica—680 mmf., ±10%, 500 v., Char. D, E, or F
C515	———	Paper—.01 mf., ±10%, 400 v.
C517	———	Paper—0.1 mf., ±10%, 600 v.
C518	———	Paper—.018 mf., ±10%, 600 v.
C519	———	Paper—.0047 mf., ±10%, 600 v.
C520	107735	Paper—0.1 mf., ±20%, 600 v.
C521	———	Paper—.068 mf., ±10%, 400 v.
C523	———	Paper—.047 mf., ±20%, 400 v.
C524	———	(Part of CPR501)
C525	———	(Part of PC502)
C526	———	(Part of PC503)
C527	———	(Part of CPR502)
C530	———	Paper—.0039 mf., ±10%, 600 v.
C531, C532	———	(Part of PC502)
CPR201	104329	Circuit—Printed sound I.F. grid circuit (includes C203, R201)
CPR202	107278	Circuit—Printed sound I.F. cathode component (includes C204, R202)
CPR203	109320	Circuit—Printed 3rd pix I.F. cathode component circuit (includes C231, R225)
CPR501	107283	Circuit—Printed component (includes C524, R538)
CPR502	107492	Circuit—Printed component (includes C527, R513)
CR201	76675B	Rectifier—Crystal rectifier
F101	104295	Fuse—Surge limiter
F102, F103	———	Fuse—#28 AWG
J104	51388	Connector—Jack for stereo for 191BR254
L101	105522	Coil—Width
L102, L103	107385	Choke—R.F.
L104	100286	Choke—Filter
L105 to L108	———	(Part of yoke)
L201, L202	73477	Coil—Filament choke
L204	101819	Coil—Peaking
L205	101287	Coil—Peaking
L206	105516	Coil—Peaking
L207	104230	Coil—Peaking
L208	109171	Coil—R.F. choke
L501	107284	Coil—Horizontal frequency and sine wave
PC201	107276	Circuit—Printed sound I.F. component circuit (includes C207, C213, R204, R205, R207)
PC202	107277	Circuit—Printed pix I.F. component circuit (includes C222, C223, R218, R220, R221, R223, R224)
PC203	107200	Circuit—Printed sync. grid component circuit (includes C236, R240, R241, R242)
PC501	107280	Circuit—Printed component (includes R508, R509, R511, R528, R530, R531, R532, R533)
PC502	109536	Circuit—Printed component (includes C509, C525, C531, C532, R522, R548, R549)
PC503	109537	Circuit—Printed component (includes C526, R544)
PW200	109538	Circuit—Printed pix and sound I.F. circuit less tubes for KCS134A & B chassis
PW200	109539	Circuit—Printed pix and sound I.F. circuit less tubes for KCS134C chassis
PW500	109535	Circuit—Printed deflection strip less tubes
		RESISTORS
		Fixed, Composition—Unless Otherwise Specified:
R101	103352	2200 ohms, ±10%, 4 w.
R102	109528	Control—On-off/volume (KCS134A & B)
R102	109529	Control—Volume-remote (KCS134C)
R104	109177	Control—Vertical hold
R105	———	47 ohms, ±20%, ½ w.
R106	213756	10,000 ohms, ±10%, 3w.
R109	———	150,000 ohms, ±20%, ½ w.
R110	102789A	2700 ohms, ±10%, 7 w.
R111	———	1800 ohms, ±10%, 2 w.
R112	109176	Control—Brightness
R114	———	220,000 ohms, ±10%, ½ w.
R115	———	4700 ohms, ±20%, ½ w.
R116	———	2.2 megohms, ±20%, ½ w.
R117, R118	———	(Part of yoke)
R119	104382	Wire wound, 1 ohm, ±10%, ½ w.
R120	109530	Control—Horizontal hold
R122	———	18,000 ohms, ±10%, 2 w.
R123	107191	120 ohms, cold, +50 —25%
R124	———	(Part of yoke)
R127	109301	Control—Contrast
R131	———	1.8 megohms, ±10%, ½ w.
R132	———	3.9 megohms, ±10%, ½ w.
R133	———	470,000 ohms, ±10%, ½ w.

SYMBOL NO.	STOCK NO.	DESCRIPTION
R134	———	4700 ohms, ±10%, ½ w.
R150	107292	330 ohms, ±10%, 4 w.
R159	———	2.2 megohms, ±10%, ½ w.
R160	———	150,000 ohms, ±10%, ½ w. for 191BR254
R201	———	(Part of CPR201)
R202	———	(Part of CPR202)
R203	———	100,000 ohms, ±10%, ½ w.
R204, R205	———	(Part of PC201)
R207	———	(Part of PC201)
R209	———	560,000 ohms, ±10%, ½ w.
R210	———	1500 ohms, ±10%, 1 w.
R211	———	(Part of T203)
R212	———	470,000 ohms, ±20%, ½ w.
R213	———	470 ohms, ±10%, ½ w.
R214	———	10,000 ohms, ±5%, ½ w.
R215	———	3900 ohms, ±5%, ½ w.
R216	———	1000 ohms, ±20%, ½ w.
R217	———	56 ohms, ±5%, ½ w.
R218	———	(Part of PC202)
R220, R221	———	(Part of PC202)
R222	———	12 ohms, ±5%, ½ w.
R223, R224	———	(Part of PC202)
R225	———	(Part of CPR203)
R226	———	470 ohms, ±10%, ½ w.
R227	———	3900 ohms, ±5%, ½ w.
R228	106975	8200 ohms, ±10%, 7 w.
R230	———	120,000 ohms, ±10%, ½ w.
R231	———	6800 ohms, ±10%, ½ w.
R232	———	150,000 ohms, ±20%, ½ w.
R234	———	330 ohms, ±20%, ½ w.
R235	———	33,000 ohms, ±10%, ½ w.
R236	———	27 ohms, ±10%, ½ w.
R237	———	68,000 ohms, ±10%, ½ w.
R238	———	47,000 ohms, ±10%, ½ w.
R239	———	10,000 ohms, ±10%, ½ w.
R240, R241, R242	———	(Part of PC203)
R251	———	6800 ohms, ±5%, ½ w.
R252	———	18,000 ohms, ±5%, ½ w.
R501	———	1800 ohms, ±10%, ½ w.
R502	———	100,000 ohms, ±10%, ½ w.
R503	———	220,000 ohms, ±20%, 1 w.
R504	———	2.2 megohms, ±10%, ½ w.
R505	———	180,000 ohms, ±10%, ½ w.
R508, R509 R511	———	(Part of PC501)
R512	———	560,000 ohms, ±10%, ½ w.
R513	———	(Part of CPR502)
R514	———	3300 ohms, ±5%, ½ w.
R515	———	220,000 ohms, ±5%, ½ w.
R516	———	100,000 ohms, ±10%, ½ w.
R517	———	100,000 ohms, ±10%, ½ w.
R518	———	68,000 ohms, ±5%, ½ w.
R519	———	1.0 megohm, ±10%, ½ w.
R520	———	10,000 ohms, ±10%, 1 w.
R521	———	2200 ohms, ±10%, ½ w.
R522	———	(Part of PC502)
R523	———	33,000 ohms, ±10%, ½ w.
R525	———	6.8 megohms, ±10%, ½ w.
R526	———	82,000 ohms, ±10%, 1 w.
R528	———	(Part of PC501)
R530 to R533	———	(Part of PC501)
R534	———	27,000 ohms, ±5%, ½ w.
R537	———	3300 ohms, ±20%, ½ w.
R538	———	(Part of CPR501)
R539	———	1000 ohms, ±20%, ½ w.
R540	———	27,000 ohms, ±10%, 1 w.
R541	———	1.2 megohms, ±10%, ½ w.
R542	———	6.8 megohms, ±10%, ½ w.
R544	———	(Part of PC503)
R548, R549	———	(Part of PC502)
SR101, SR102	———	Rectifier—Silicon RCA type 1N1763
T101	109067	Transformer—Audio
T102	109068	Transformer—Hi-voltage
T103	109069	Transformer—Power
T104	109066	Transformer—Vertical output
T201	104136	Transformer—Sound take off (includes C202)
T202	107201	Transformer—Driver (includes C205, C206)
T203	105795	Coil—Ratio detector (includes C214, R211)
T204	107202	Transformer—I.F. pix
T205	107203	Transformer—1st I.F. grid trap
T206	109071	Transformer—1st I.F. pix
T207	109158	Transformer—2nd I.F. pix
T208	109076	Transformer—3rd I.F. pix
T209	104903	Coil—4.5 MC trap
		MISCELLANEOUS
	109139	Antenna—Telescoping (rod) (VHF)
	107261	Antenna—UHF (ring) for 191B242U, 244U, 255U, 256U, 257U
	109499	Back—Back cover, tuskon ivory, phenolic, for all models except 191BR254
	109500	Back—Back cover, tuskon ivory, phenolic, for 191BR254
	109503	Balun—Antenna impedence matching, for 191B242, 244 & U
	Z4806	Cabinet—Autumn mahogany, roller grain, for 191B255 & U
	Z4807	Cabinet—Ribbon walnut, roller grain, for 191B256 & U
	Z4808	Cabinet—Toast oak, roller grain, for 191B-257 & U
	Z4804	Cabinet—Black, for 191B242 & U
	Z4805	Cabinet—Tuskon ivory, for 191B244 & U
	Z4809	Cabinet—Tuskon ivory, for 191BR254
	106976	Cable—Power
	107723	Cable—R.F. link
	109058	Cap—For H.V. rect. tube
	109519	Clip—Clip for mask and escutcheon spring steel on 191BR254
	107186	Clip—Clip for C119 capacitor
	107329	Clip—Clip for H.V. shield
	109138	Clip—Interlock for power cord
	109521	Clip—Spring clip for mask
	105056	Connector—Female, speaker connector
	100029	Connector—2 contact male, power input
	109064	Cover—Cover assy. for L204, L205, T208
	109131	Dial—UHF, phenolic, clear, for 191B255U, 256U, 257U
	109506	Escutcheon—Aluminum, nickel silver, fine tuning, contrast, on-volume, for 191B255, 256, 257
	109509	Escutcheon—Aluminum, nickel silver, fine tuning, contrast, on-volume, for 191B255U, 256U, 257U
	109508	Escutcheon—Aluminum, red brass, fine tuning, contrast, on-volume, for 191B244 & U
	109505	Escutcheon—Aluminum, red brass, fine tuning, contrast, on-volume, for 191B244
	109504	Escutcheon—Aluminum, black, fine tuning, contrast, on-volume, for 191B242
	109507	Escutcheon—Aluminum, black, fine tuning, contrast, on-volume, for 191B242U
	109526	Escutcheon—Channel selector, fine tuning, contrast, vol. brass, for 191BR254
	109517	Escutcheon—Remote, aluminum, antique bronze, for 191BR254
	109512	Escutcheon—Speaker, aluminum, antique bronze, for 191B244
	109513	Escutcheon—Speaker, aluminum, antique bronze, for 191B244U
	109510	Escutcheon—Speaker, aluminum, black, for 191B242
	109511	Escutcheon—Speaker, aluminum, black, for 191B242U
	109514	Escutcheon—Speaker, aluminum, champagne gold, for 191B244, 256, 257
	109515	Escutcheon—Speaker, aluminum, champagne gold, for 191B255U, 256U, 257U
	103685	Foot—Mounting foot
	109099	Grommet—High voltage compartment
	71851	Grommet—Remote control microphone mounting for 191BR254
	109520	Handle—Carrying, zinc die cast brass for 191B255, 256, 257 & U, 191BR254
	107691	Handle—Carrying handle, plastic, ivory, only stocked for 191B242, 244 & U
	101526	Jack—Telephone, external speaker for 191-BR254
	107265	Knob—Brightness, horizontal and vertical for 191B242, 244 & U
	109128	Knob—Channel selector and UHF, zinc die cast for 191B255U, 256U, 257U

SYMBOL NO.	STOCK NO.	DESCRIPTION
	109501	Knob—Channel selector, VHF-UHF for 191B-242, 244 & U
	107264	Knob—Contract, clear, for 191B242, 244 & U
	109130	Knob—Control, zinc die cast for 191B255, 256, 257 & U, 191BR254
	107266	Knob—Dial UHF, clear, for 191B242U, 244U
	107263	Knob—Fine tuning, clear, for 191B242, 244 & U
	109130	Knob—Fine tuning, zinc die cast, for 191B-255, 256, 257 & U, 191BR254
	107264	Knob—On-off volume for 191B242, 244 & U
	109518	Knob—Preset, fine tuning,for 191BR254
	107269	Knob—Selector, UHF, brass, for 191B242U, 244U
	109502	Knob—Selector, VHF-UHF for 191B255, 256, 257 & U
	102932	Lead—Anode connector and lead
	109172	Link—Handle, brass, for 191B242, 244 & U
	107192	Magnet—Centering
	109522	Mask—Desert gold, phenolic, for 191B242 & U
	109523	Mask—Toteabout gray, phenolic, for 191B-244 & U
	109525	Mask—Toteabout gray, phenolic, for 191BR-254
	109524	Mask—Tuskon ivory, phenolic, for 191B255, 256, 257 & U

SYMBOL NO.	STOCK NO.	DESCRIPTION
	107850	Microphone—Transducer receiver for 191BR-254
	109531	Shaft—Connecting shaft contrast control
	109059	Socket—For H.V. rect. tube 1G3GT/1B3GT
	107217	Socket—Kine tube socket
	31251	Socket—Tube for horiz. output tube 6DQ6A
	102787	Socket—Tube, 8 pin for damper tube 6DE4
	105780	Socket—Tube, 7 pin for V202, V204
	109037	Socket—Tube, 7 pin for V205, V206, V201
	107207	Socket—Tube, 9 pin for V203, V207, V501, V502, V504
	102787	Socket—Yoke socket
	107476	Speaker—4 x 6 P.M.
	107793	Spring—Knob retaining for 107264, 107265, 107263
	100584	Spring—Knob retaining for 107266, 109131
	76837	Spring—Knob retaining for 107269, 109128
	109132	Spring—Knob retaining for 109130, 109518
	106154	Spring—Tube holder for V203
	109516	Support—Carrying handle support bar, steel for 191B242, 244 & U
	107258	Support—Handle support for 191B242, 244 & U
	109532	Yoke—Deflection 110°

IMPORTANT INFORMATION FOR YOUR SERVICE DEPARTMENT

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FOR R C A VICTOR TELEVISION DIVISION, RADIO CORPORATION OF AMERICA

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SOCKET VOLTAGES — CTP8A & CTP9A Remote Amplifiers

Service Data 1959 No. T5, 8, 9, 13, 14, TM1

The socket voltages for the one and three button remote control amplifier chassis (CTP8A & CTP9A) are given in the following tables. These voltages are measured with a "Voltohmyst"® under a no signal condition and should hold within ±20% with a 117 volt AC supply source.

CTP8A	V1001	V1002	V1003
Pin 1	86	94	52
Pin 2	0	0	0
Pin 3	—0.35	0	0
Pin 4	0	0	0
Pin 5	0	0	6.3 AC
Pin 6	92	100	160
Pin 7	0	0	3
Pin 8	0	0	16.5
Pin 9	6.3 AC	6.3 AC	0

CTP9A	V1001	V1002	V1003	V1004
Pin 1	85	90	37	165
Pin 2	0	0	0	2
Pin 3	0	0	—0.9	11.2
Pin 4	6.3 AC	6.3 AC	0	6.3 AC
Pin 5	6.3 AC	6.3 AC	6.3 AC	0
Pin 6	80	85	165	165
Pin 7	0	0	2	2
Pin 8	0	0	11.2	11.2
Pin 9	0	0	0	0

HORIZONTAL OUTPUT TUBE SCREEN RESISTORS — CTC10 Chassis

Service Data 1960 No. T5

In the screen circuit of the horizontal output tube (V105) there are two resistors connected in series — R126, 47 ohms; and R127, 16K ohms. In some chassis one or two additional resistors — R128, 100K ohms; and R134, 150K ohms — may be found connected in parallel with R127. The purpose of these additional resistors (R128, R134) is to increase the voltage on the screen of V105 and thus produce more horizontal drive.

Should a condition of excessive drive be encountered in the field, R134 and/or R128 may be clipped out of the circuit; or if a condition of insufficient drive is encountered, R128 and/or R134 may be added.

CAUTION — Before removing or adding these resistors, be certain that it is not some other trouble causing the condition. Be sure that the horizontal oscillator is properly aligned for minimum tube current.

DISTORTED AND WEAK SOUND — KCS 128 Chassis

Service Data 1959 No. T8

A few cases have been found where the lead from the coil of T203 — the sound detector transformer (quadrature coil) — does not make a good electrical contact to its terminal (E).

This condition is manifest by distorted and weak sound, and the apparent need for realignment. Should such a condition be encountered, check the coil to terminal contact of T203-E.

Terminal E connects externally to pin 7 of V202 — the second detector tube.

RESISTOR CHANGE — KRS 24B & C Remote Control Chassis

Service Data 1960 Nos. T3 & 6

The value of the shunting resistors on the remote volume control switch have been changed as follows: —

Change R1007 —— Resistor — 10,000 ohms
R1008 —— Resistor — 12,000 ohms
R1021 —— Resistor — 47,000 ohms
To read R1007 —— Resistor — 2200 ohms, ± 10%, ½ watt.
R1008 —— Resistor — 5600 ohms, ± 10%, ½ watt.
R1021 —— Resistor — 18,000 ohms, ± 10%, ½ watt.

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VERTICAL HOLD CONTROL RANGE — KCS130 Chassis

Service Data 1960 No. T3

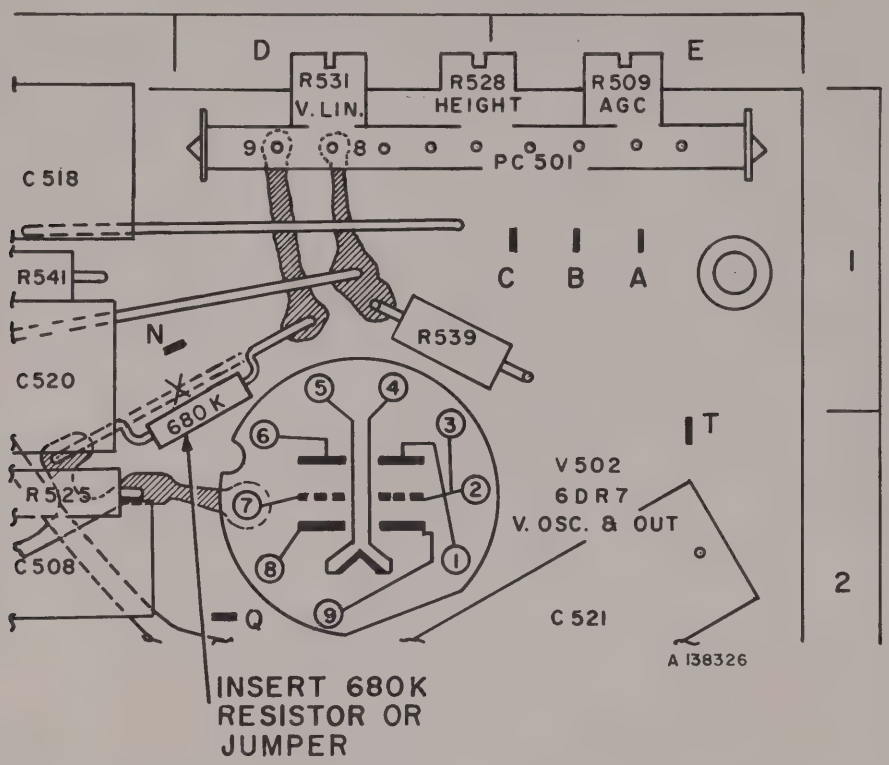
A condition of one way, or inadequate, vertical hold range may exist in the KCS 130 chassis using an early type Vertical Hold Control. This control is embodied in a unit (PC501) which also contains the Height and A.G.C. controls.

The early type triple control may be identified by the RCA drawing number 973927-1. Boards having this early control should have a 680K or 560K ohm resistor connected between point 9 of PC501 and pin 7 of V502. Should a board containing the early type control be encountered in which there is a jumper instead of the resistor, the resistor should be installed.

Later chassis contain a triple control stamped 973927-4 which does not require the resistor. These chassis should have a jumper between the points indicated.

If replacement of this triple control becomes necessary, the late type should be supplied in which case the resistor, if present, should be removed and a jumper installed in its place.

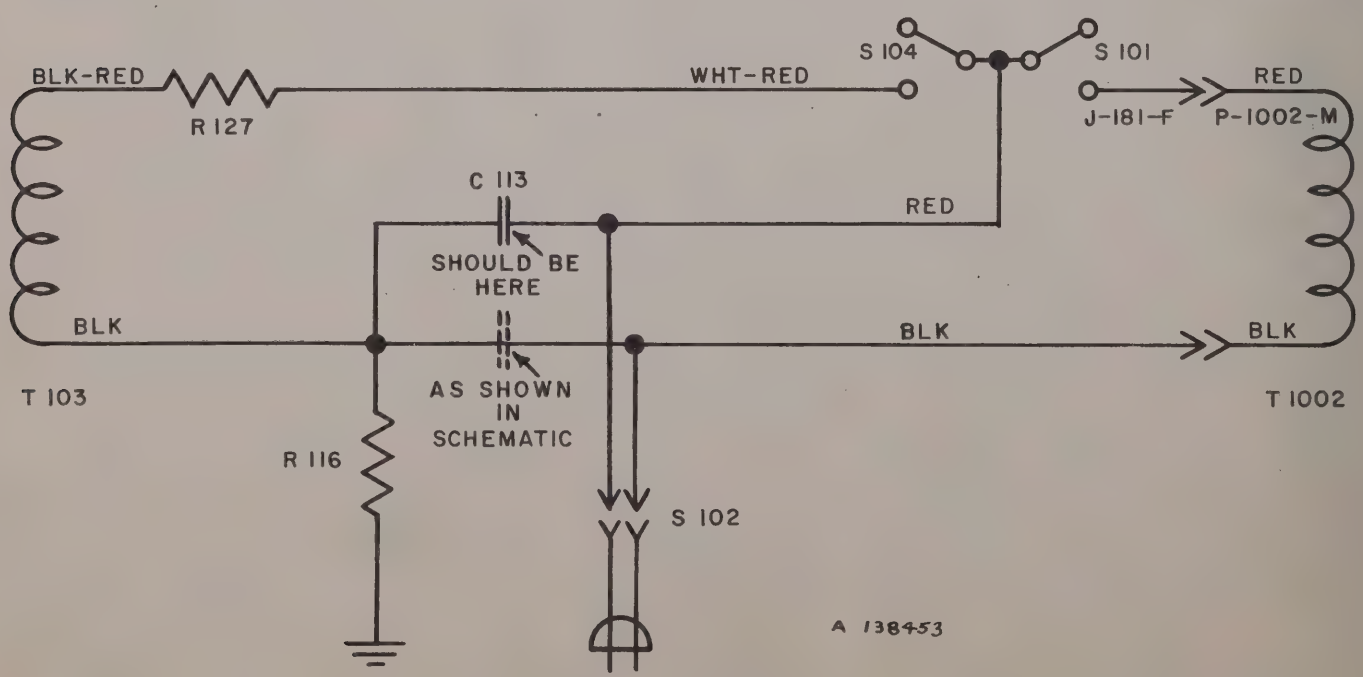
The illustration shows the location of the resistor or jumper.



CHANGE IN CAPACITOR LOCATION — CTP9A Remote Amplifier

Service Data 1959 No.T8

The location of capacitor C113 in the schematic of the above service data should be changed as shown in the accompanying illustration.



IMPORTANT INFORMATION FOR YOUR SERVICE DEPARTMENT

TELEVISION SERVICE TIPS

PREPARED AND DISTRIBUTED BY COMMERCIAL SERVICE
RCA SERVICE COMPANY, CAMDEN 8, N. J.
FOR R C A VICTOR TELEVISION DIVISION, RADIO CORPORATION OF AMERICA

VOLUME XI ISSUE 7 JULY 1, 1960

CORONA

High Voltage corona may manifest itself, particularly on weak signals, by horizontal instability, vertical jitter, or interference.

Any sharp projection, such as a soldered connection where the solder has been "pulled" to a point, or an end of wire that is protruding, can be a source of corona. Every soldered connection in the high voltage line should have a smooth rounded surface, and all wire ends should be wrapped around the terminal and covered with solder.

Another source of corona has been found in the H.V. plate connectors (top cap). After a period of use these caps may deteriorate (generally indicated by a darkening caused by carbonization) and give rise to a corona condition.

Any part or wire that is found to be the cause of corona should be replaced, repaired, or redressed as required to eliminate the condition. The plate cup is available under Stock No. 105256—Connector.

PRODUCTION CHANGES — KCS130M Chassis

Service Data 1960 No. T3

KCS130M Chassis embody two versions of the KRK87L tuner and of the PW200 IF and Video board. The versions are identified by the presence or absence of a color dot which indicates slight changes in components as described below.

KRK87L tuners bearing a red dot have a capacitor (C28,0.75mmf) connected from the plate of mixer tube (V2A) to ground as shown in the service data schematic on page 18. The tuners without the red dot do not have C28 in the circuit and the coil L11 contains a few additional turns.

PW200 boards must match this circuit change in the tuner to obtain best response. C217 on PW200 is 9.5 mmf on boards which bear a white dot only (no blue dot) and these boards are used with tuners bearing the red dot. On PW200 boards bearing a blue dot near the white dot, the value of C217 is increased to 10 mmf for use with tuners without the red dot.

To repeat — a board with a blue dot (C217,10 mmf) is for use with a tuner without a red dot (no C28), and a board without a blue dot (white dot only—C217,9.5mmf) is for use with a tuner with a red dot (C28,0.75 mmf).

ADDITION TO PARTS LIST — Model 17-S-350G

Service Data 1953 No. T13

Under "Miscellaneous"
Add 78494 — Glass — Safety Glass (curved) — for model 17-S-350G(GU)

ADDITION TO PARTS LIST — Models 170-PR-106-9, 170-TR-114-5

Service Data 1959 No. T5

Add the following items to the KRK85 VMF Tuner assembly parts list (page 24) of Service Data 1959 No. T5.
B1051 —— 107501 —— Motor-Channel selector drive
S1051 —— ——— —— Switch-TV/Motor (Pt. of B1051)
S1052 —— 107470 —— Switch-Motor on-off

CORRECTION TO PARTS LIST — KCS121 Chassis

Service Data 1958 No. T8

Change the following item listed in the miscellaneous parts list (page 29) of Service Data 1958 No. T8 to read:
107235 —— Knob — Fine tuning — mocha — For Models 21-D-9534 & U, 21-T9378 & U.

CORRECTION TO PARTS LIST — 210-CK-855 Series Color Television Receivers

Service Data 1959 No. T6

Change the following items listed in the miscellaneous parts list (page 48) of Service Data 1959 No. T6 to read:
107649 —— Cover — Hidden control for 210-CK-855 & U, 210-CK-875 & U.
107650 —— Cover — Hidden control for 210-CK-856 & U, 210-CK-876 & U.
106699 —— Cover — Hidden control for 210-CK-857 & U.

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TILT CAUTION — 23" TV Receivers

When servicing a receiver of the 23" series, the servicing caution label attached to the interior of the cabinet must be observed if removal of the chassis from the cabinet becomes necessary.

Removal of the chassis in these instruments disturbs the weight distribution, leaving the weight of the kine at the front of the cabinet with no weight to counterbalance it. This presents a possibility of the cabinet tipping forward.

Causing the cabinet to slant to the rear by removing the *rear* castors, of instruments having castors, or blocking up the front legs of instruments without castors, will alleviate this tendency.

INOPERATIVE OR WEAK REMOTE TRANSMITTERS — CRK3A, B

Service Data 1959 Nos. T6, 8, 9, 14, 20

In checking the above remote transmitters for weak or no operation, examine the leads of the coil for breaks paying particular attention to terminals 4 and 5. As these wires are very fine, care must be exercised in handling them to prevent irrepairable damage.

The riveted and soldered connection of the button-lever-plate should also be checked. This plate is riveted through the board to its connection strip on the reverse side and both ends of the rivet have been soldered. Some cases have been found in early production where insufficient heat in soldering has caused a cold solder joint. Do not depend on the soldered joint *looking* satisfactory, heat it with a heavy iron to be certain that a good *electrical* connection is made.

CORRECTION

Television Service Tip — Volume XI, Issue 3

On page 2, under Model N-2026 Series — KCS127 Chassis — Service Data 1959 No. T7 "add to parts list," R114 — 4,700 ohms should be R115 — 4,700 ohms, ±10%, ½ w.

On page 4, under Model 230-K-535 Series — KCS127 Chassis — Service Data 1959 No. T20 the stock number for the contacts A.C. Cable connector (J181) is 106842.

NEW MODELS — Models 211-CD-835X, 6X, 7X

Service Data 1960 No. T5

These new models are the same as models 211-CD-835, 6, 7, except for the legs which are not supplied with the X models. Service data 1960 No. T5 applies to the above models.

PARTS LIST CORRECTION

Service Data 1959 No. T13

Change T103 — 107473 — Transformer
To read T103 — 107233 — Transformer — Power (KCS126YF)

PARTS LIST CORRECTION — CTP8A Remote Control Chassis

Service Data 1959 No. T8

Change SR1001 —— 106591 — Rectifier
To read SR1001 —— 106951 — Rectifier-Selenium

PARTS LIST CORRECTION — CRK3B Remote Control Transmitter

Service Data 1959 No. T9

Change C2006 —— 17644 — Capacitor-Mica
To read C2006 —— 107644 — Capacitor-Mica-39 mmf., ± 2%, 500 v.

PARTS LIST CORRECTION — KRK73 Tuner

Service Data 1958 Nos. T8, 9, 12, 14

Change S1A —— 106490 — Stator
To read S1A —— 106983 — Stator-Oscillator coil and stator assembly

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ADDITION TO PARTS LIST — Models 210-KA-465, 466

Service Data 1959 No. T7

Under "Miscellaneous"
Add X5091 —— Leg — Cabinet — for 210-KA-465
X5092 —— Leg — Cabinet — for 210-KA-466

ADDITION TO PARTS LIST — CTC7 Chassis

Service Data 1958 No. T10

Under "Miscellaneous"
Add 77521 —— Nut — Channel Indicator dial drum retaining nut - push on type - for CTC7AA, AB, AC, AD, AK & AL.

ADDITION TO PARTS LIST — CTC10 Chassis

Service Data 1960 No. T5

Under Chassis Assembly CTC10 "Miscellaneous"
Add 48474 — Lamp — Neon, type NE 2 (2 req'd)

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NEW MODEL — 191-S-256

Service Data 1960 No. T7

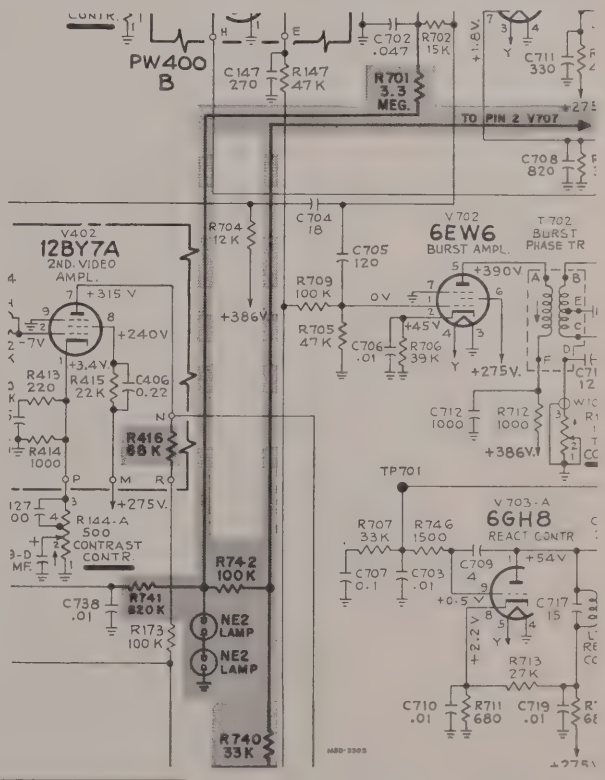
Model 191-S-256 has been added to this series of "19 inch" black and white television receivers. This model is identical to Model 191-B-256 except that the cabinet antenna is omitted. The receiver employs a KCS 134A chassis with a KRK 96P VHF tuner. All service and parts information given in Service Data 1960 No. T7 for Model 191-B-256 also applies to Model 191-S-256.

CIRCUIT CHANGE — CTC10 chassis

Service Data 1960 No. T5

Two neon lamps (NE2) connected in series, are used to act as a stabilizer and to control blooming of the kine when the brightness control is advanced to a high level.
Failure of these lamps will cause the set to lose brightness, which in most cases cannot be regained by adjustment of the brightness control.

To guard against lamp failure, late production of this chassis has increased the value of R741 from 470,000 ohms to 820,000 ohms and has added R742 — 100,000 ohms between the junction of R741, R701, and the neon lamps; and the junction of V707-B pin 2, and R740. Should replacement of the neon lamps be necessary, R741 should be changed and R742 should be added. This change and addition is pictured in the illustration.



PARTS LIST CHANGE

Under "Miscellaneous" — page 41

Add 48474 —— Lamp — Neon lamp type NE2

Under "Resistors" — page 40

Change R741 — 470,000 ohms
R742 — 220,000 ohms

To read R741 — 820,000 ohms, ±10%, ½w.
R742 — 100,000 ohms, ±10%, ½w.

CORRECTION — CTC10 Chassis

Service Data 1960 No. T5

In the schematic diagram, R146 68,000 ohms, on PW400A, connected between points R and N, near 12 BY7A 2nd Video, should be R416.

SCHEMATIC VOLTAGES — KCS131 & 132 Chassis

Service Data 1960 No. T6

The voltages as shown in the schematics in the service data should be changed as follows:—

Pin No.	V201	V202
5	107v	105v
6	130v	98v
7	0.41v	2.6v

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REMOTE CONTROL TV RECEIVERS — 1957, 1958, 1959

Model	Chassis	Tuner Mounting	Remote Receiver	Remote Transmitter		Type	Remote Unit Battery*
				Model	Kit		
21 RC 8975-7	CTC-7AE	KRK-75A	KRK-83B	KRK-84A	WW4	4-Button	VS304
21 RC 8975U-7U	CTC-7AF	KRK-76A	KRK-83B	KRK-84A	WW4	4-Button	VS304
21 RC 8985-7	CTC-7AH	KRK-75A	KRK-83B	KRK-84A	WW4	4-Button	VS304
21 RC 8985U-7U	CTC-7AJ	KRK-76A	KRK-83B	KRK-84A	WW4	4-Button	VS304
21 RC 8995-6	CTC-7AM	KRK-75B	CTP-6A	CRK-1A	WW7	14-Button	VS165
21 RC 8995U-6U	CTC-7AN	KRK-76B	CTP-6A	CRK-1A	WW7	14-Button	VS165
21 RD 8525	KCS-108H	KRK-62AD	KRK-65B	—	—	Wired	—
21 RD 9675-6-7	KCS-121K	KRK-78K	KRK-83A	KRK-84A	WW4	4-Button	VS304
21 RD 9675U-6U-7U	KCS-121L	KRK-78L	KRK-83A	KRK-84A	WW4	4-Button	VS304
21 RD 9690-9	KCS-121M	KRK-78M	KRK-83A	KRK-84A	WW4	4-Button	VS304
21 RD 9690U-9U	KCS-121N	KRK-78N	KRK-83A	KRK-84A	WW4	4-Button	VS304
21 RT 8202	KCS-113H	KRK-62C	KRK-65B	—	—	Wired	—
21 RT 8425	KCS-113K	KRK-62H	KRK-65B	—	—	Wired	—
21 RT 9632-5-7	KCS-122BW	KRK-78AD	KRK-83A	KRK-84A	WW4	4-Button	VS304
21 RT 9632U-5U-7U	KCS-122BAA	KRK-78AE	KRK-83A	KRK-84A	WW4	4-Button	VS304
21 RT 9655-6-7	KCS-122BAB	KRK-78AF	KRK-83A	KRK-84A	WW4	4-Button	VS304
21 RT 9655U-6U-7U	KCS-122BAC	KRK-78AH	KRK-83A	KRK-84A	WW4	4-Button	VS304
170 PR 106-9	KCS-126F	KRK-85H	CTP-8A	CRK-4A	DK34	1-Button	VS163
170 PR 106M-9M	KCS-126YF	KRK-70P	CTP-8A	CRK-4A	DK34	1-Button	VS163
170 TR 114-5	KCS-126J	KRK-85L	CTP-8A	CRK-4A	DK34	1-Button	VS163
170 HTR 114M-6M	KCS-126YU	KRK-70R	CTP-8A	CRK-4A	DK34	1-Button	VS163
210 KR 435-6	KCS-128U	TMA-4A	CTP-8A	CRK-4A	DK34	1-Button	VS163
210 KR 435M-6M	KCS-128YU	TMA-4C	CTP-8A	CRK-4A	DK34	1-Button	VS163
210 KR 435SU-6SU	KCS-128ZU	TMA-8A	CTP-8A	CRK-4A	DK34	1-Button	VS163
210 KR 445-6	KCS-128M	TMA-3C	CTP-9A	CRK-3B	DK35	3-Button	VS163
210 KR 445M-6M	KCS-128YM	TMA-3L	CTP-9A	CRK-3B	DK35	3-Button	VS163
210 KR 445SU-6SU	KCS-128ZM	TMA-3E	CTP-9A	CRK-3B	DK35	3-Button	VS163
210 KR 455-6-7	KCS-128M	TMA-3C	CTP-9A	CRK-3B	DK35	3-Button	VS163
210 KR 455SU-6SU-7SU	KCS-128ZM	TMA-3E	CTP-9A	CRK-3B	DK35	3-Button	VS163
210 RB 211	KCS-128U	TMA-4A	CTP-8A	CRK-4A	DK34	1-Button	VS163
210 RB 211M	KCS-128YU	TMA-4C	CTP-8A	CRL-4A	DK34	1-Button	VS163
210 RB 211SU	KCS-128ZU	TMA-8C	CTP-8A	CRK-4A	DK34	1-Button	VS163
210 TR 212	KCS-128U	TMA-4A	CTP-8A	CRK-4A	DK34	1-Button	VS163
210 TR 212M	KCS-128YU	TMA-4C	CTP-8A	CRK-4A	DK34	1-Button	VS163
210 TR 212SU	KCS-128ZU	TMA-8A	CTP-8A	CRK-4A	DK34	1-Button	VS163
210 TR 215M	KCS-128YU	TMA-4C	CTP-8A	CRK-4A	DK34	1-Button	VS163
210 TR 215SU	KCS-128ZU	TMA-8A	CTP-8A	CRK-4A	DK34	1-Button	VS163
210 TR 222-5-7	KCS-128M	TMA-3C	CTP-9A	CRK-3B	DK35	3-Button	VS163
210 TR 222M-5M-7M	KCS-128YM	TMA-3L	CTP-9A	CRK-3B	DK35	3-Button	VS163
210 TR 225SU	KCS-128ZM	TMA-3E	CTP-9A	CRK-3B	DK35	3-Button	VS163
210 CKR 940-6	CTC-9N	KAK-75D	CTP-7A	CRK-3A	DK36A	7-Button	VS163
210 CKR 940U	CTC-9P	KRK-76D	CTP-7A	CRK-3A	DK36A	7-Button	VS163
210 CTR 845	CTC-9N	KRK-75D	CTP-7A	CRK-3A	DK36A	7-Button	VS163
210 DKR 655SU-6SU-7SU	KCS-129ZAA	TMA-3H	CTP-9A	CRK-3B	DK35	3-Button	VS163
210 DKR 670SU-9SU	KCS-129ZAA	TMA-3H	CTP-9A	CRK-3B	DK35	3-Button	VS163
210 DKR 715-6	KCS-129H	TMA-3A	CTP-9A	CRK-3B	DK35	3-Button	VS163
210 DKR 715SU-6SU	KCS-129ZH	TMA-3J	CTP-9A	CRK-3B	DK35	3-Button	VS163
230 KR 525SU-6SU	KCS-127ZAE	TMA-3E	CTP-9A	CRK-3B	DK35	3-Button	VS163

* or equivalent

VERTICAL CONVERGENCE — CTC10 Chassis

Service Data 1960 No. T5

A condition may be encountered in a few of the CTC10 chassis of insufficient range in the vertical tilt control to obtain optimum convergence. If this condition is encountered, the range of the tilt controls may be shifted by changing the ground connection of the tilt winding on T104 (vertical output transformer) from the tap (black-green wire) to the end of the winding (black-red wire).

This change in grounding is readily accomplished by removing the black-green (tap) wire from the ground lance to which it is directly connected. (The end of the wire should be taped to prevent its shorting.) A jumper is then connected from this same lance to the black-red wire which is connected to a lug on a terminal board located in close proximity to T104. This change should only be made in those cases where additional vertical tilt range is necessary to obtain optimum convergence.

In production this change has been made, where necessary, by one of three methods. The first method is similar to that described above, but the point of grounding may vary. In the second method, the 2 lug terminal board, near T103 on the top of the chassis (mounting for R701), has been changed to one with 5 lugs and the black-green and black-red wires from T104 have been brought out to two of the lugs to provide accessibility. A jumper is soldered from the ground lug to the appropriate terminal on this board. The third method is similar to the second with the addition of a clip on the end of the ground jumper to further facilitate connection change when necessary.

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PREPARED AND DISTRIBUTED BY COMMERCIAL SERVICE
RCA SERVICE COMPANY, A DIVISION OF RADIO CORPORATION OF AMERICA
CAMDEN 8, N. J.

VOLUME XI ISSUE 9 JULY 20, 1960

CONVERSION OF 1960 AND 1961 BLACK AND WHITE TELEVISION RECEIVERS FOR UHF RECEPTION.

Conversion of 1960 and 1961 black and white television receivers for UHF reception is accomplished through the use of one or more of the following kits.

1.—DK32, DK32A and DK32B kits consist of a continuously variable UHF tuner, with associated hardware, for use with models equipped with switch type tuners.

2.—The DK40 kit consists of a UHF insert for use with all insert type tuners EXCEPT tuners employing a Nuvistor R-F amplifier.

3.—The DK50 kit consists of a UHF input network for insert type tuners not originally equipped with a UHF input.

4.—The DK60 kit consists of a UHF insert for use with ALL insert type tuners.

The following table indicates the proper kit or kits to be used for conversion of a particular model for UHF reception. Models which are not convertible to UHF are also indicated in the table.

Model	UHF Tuning Location	Conversion Kit(s)
N202	——	Not convertible
N202-SU	Side	DK40 or DK60 Inserts
140-P-01	——	Not convertible
140-P-02	——	Not convertible
170-P-03	——	Not convertible
170-P-04	——	Not convertible
170-P-05	——	Not convertible
170-P-06	——	Not convertible
170-PR-10	——	Not convertible
170-T-07	——	Not convertible
170-T-08	——	Not convertible
170-T-12	——	Not convertible
170-TC-09	——	Not convertible
170-TR-11	——	Not convertible
171-A-03	——	Not convertible
171-A-04	——	Not convertible
171-A-06	——	Not convertible
171-AR-06	Front	DK50 UHF Input & *DK40 or *DK60 Inserts
191-B-24	——	Not convertible
191-B-25	——	Not convertible
191-BR-25	Front	DK50 UHF Input & *DK40 or *DK60 Inserts
210-DK-59	Side	DK32, DK32A or DK32B Tuner
210-DK-63	Front	DK32, DK32A or DK32B Tuner
210-DK-63-SU	Front	DK40 or DK60 Inserts

Model	UHF Tuning Location	Conversion Kit(s)
210-DK-65	——	Not convertible
210-DK-67	——	Not convertible
210-DKR-65-SU	——	DK40 or DK60 Inserts
210-DKR-67-SU	Side	DK40 or DK60 Inserts
210-DKR-71	Side	Not convertible
210-DKR-71-SU	Front	DK40 or DK60 Inserts
210-DT-57	Front	DK32, DK32A or DK32B Tuner
210-K-24	Front	DK32A or DK32B Tuner
210-K-24-SU	Front	DK40 or DK60 Inserts
210-K-25	Front	DK32, DK32A or DK32B Tuner
210-K-25-SU	Front	DK40 or DK60 Inserts
210-K-28	Side	DK32, DK32A or DK32B Tuner
210-K-28-SU	Side	DK40 or DK60 Inserts
210-K-29	Side	DK32, DK32A or DK32B Tuner
210-K-29-SU	Side	DK40 or DK60 Inserts
210-K-31	Side	DK32, DK32A or DK32B Tuner
210-K-33	Front	DK32, DK32A or DK32B Tuner
210-K-35	Side	DK32, DK32A or DK32B Tuner
210-K-36	Front	DK32, DK32A or DK32B Tuner
210-K-39	Side	DK32, DK32A or DK32B Tuner
210-K-40	Front	DK32, DK32A or DK32B Tuner
210-K-41	Front	DK32, DK32A or DK32B Tuner
210-KA-46	——	Not convertible
210-KR-43	——	Not convertible
210-KR-43-SU	Front	DK40 or DK60 Inserts
210-KR-44	——	Not convertible
210-KR-44-SU	Front	DK40 or DK60 Inserts
210-KR-45	——	Not convertible
210-KR-45-SU	Front	DK40 or DK60 Inserts

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Printed in U. S. A.

Model	UHF Tuning Location	Conversion Kit(s)
210-T-14	Front	DK32, DK32A or DK32B Tuner
210-T-15	Front	DK32, DK32A or DK32B Tuner
210-T-15-SU	Front	DK 40 or DK60 Inserts
210-T-16	Front	DK32, DK32A or DK32B Tuner
210-T-17	Front	DK32, DK32A or DK32B Tuner
210-T-18	Front	DK32, DK32A or DK32B Tuner
210-T-18-SU	Front	DK 40 or DK60 Inserts
210-T-19	Front	DK32, DK32A or DK32B Tuner
210-TR-21	——	Not convertible
210-TR-21-SU	Front	DK40 or DK60 Inserts
210-TR-22	——	Not convertible
210-TR-22-SU	Front	DK40 or DK60 Inserts
211-B-31	Front	DK32, DK32A or DK32B Tuner
211-B-31-SU	Front	DK40 or DK60 Inserts
211-B-32	Front	DK32, DK32A or DK32B Tuner
211-B-32-SU	Front	DK40 or DK60 Inserts
211-D-40	Front	DK32, DK32A or DK32B Tuner
211-D-40-SU	Front	DK40 or DK60 Inserts
211-D-40C	Front	DK32A or DK32B Tuner
211-D-48	Front	DK32, DK32A or DK32B Tuner
211-D-50	Front	DK32, DK32A or DK32B Tuner
211-D-50-SU	Front	DK40 or DK60 Inserts
230-K-50	Front	DK32, DK32A or DK32B Tuner
230-K-50-SU	Front	DK40 or DK60 Inserts
230-K-50C	Front	DK32A or DK32B Tuner
230-K-50C-SU	Front	DK40 or DK60 Inserts
230-K-50N	Front	DK32A or DK32B Tuner
230-K-50N-SU	Front	DK40 or DK60 Inserts
230-K-53	Front	DK32, DK32A or DK32B Tuner
230-K-54	Side	DK32, DK32A or DK32B Tuner
230-K-55	Front	DK32, DK32A or DK32B Tuner
230-KR-52-SU	Front	DK40 or DK60 Inserts
231-B-61	——	Not convertible
231-B-61-SU	Front	DK40 or DK60 Inserts
231-BR-61	Front	DK50 UHF Input & *DK40 or *DK60 Inserts
231-BE-62	——	Not convertible
231-BE-62-SU	Front	DK60 Inserts
231-BER-62	Front	DK50 UHF Input & *DK60 Inserts
231-D-63	Side	DK32B Tuner
231-D-63-SU	Front	DK40 or DK60 Inserts
231-D-64	Side	DK32B Tuner
231-D-65	Front	DK32B Tuner
231-D-65-SU	Front	DK40 or DK60 Inserts
231-DR-65	Front	DK50 UHF Input & *DK40 or *DK60 Inserts
231-D-66	Front	DK32, DK32A or DK32B Tuner
231-D-66C	Front	DK32A or DK32B Tuner
231-D-66N	Front	DK32A or DK32B Tuner
231-DR-66	Front	DK50 UHF Input & DK40 or DK60 Inserts
231-D-69	Side	DK32B Tuner
231-D-69-SU	Front	DK40 or DK60 Inserts
231-DR-69	Front	DK50 UHF Input & *DK40 or *DK60 Inserts
231-D-71	Side	DK32B Tuner
231-DR-71	Front	DK50 UHF Input & DK40 or DK60 Inserts
231-D-73	——	Not convertible
231-DV-11	Front	DK50 UHF Input & DK60 Inserts
231-HR-77	Front	DK50 UHF Input & DK60 Inserts
231-HR-78	Front	DK50 UHF Input & DK60 Inserts
231-HR-79	Front	DK50 UHF Input & DK60 Inserts
240-K-48	Side	DK32, DK32A or DK32B Tuner
240-K-49	Side	DK32, DK32A or DK32B Tuner
240-KV-77-SU	Top	DK40 or DK60 Inserts

* Do not install inserts in the "OFF" position (position 1 between channels 13 and 2) for these models.

NOTE:—Installation information for any of the above models which have the letter "M," "R" or "X" appearing in the model number is the same as for that model without these letters.

SPEAKER PHASING

The audio quality in some TV models using "Panoramic Sound" is improved by using an out-of-phase connection between the two 3½" speakers and the larger speaker. The in-phase connection between the two 3½" speakers must be maintained. In present production, speaker phasing is determined and properly connected at the factory.

In "Panoramic Sound" instruments using the 972144-2 3½" speakers, a listening test, paying particular attention to the middle range of frequencies, will indicate the best phasing connection.

CONTRAST CONTROL — KCS128 Chassis Series — Service Data 1959 No. T5

Under "Resistors" — page 26

Change R127 — 107216 — Control — Contrast

To read R127 — 107216 — Control — Contrast control — for KCS128A, B, F & H (short shaft)

Add R127 — 107305 — Control — Contrast control — for KCS128C, D, J & K (long shaft)

CORRECTION — TV Tips — Volume XI Issue 3

Under "Model 210-K-295 Series . . . Service Data 1959 No. T8" — page 3

Change 107616 —— Lever — Remote control . . .

To read 107617 —— Lever — Remote control TV ON-OFF switch lever for KCS128M

PLAIN TALK AND Technical Tips

RCA VICTOR

VOL. 3
NO. 6
JUNE 1960

a monthly publication for the service industry about products of: RCA VICTOR HOME INSTRUMENTS OPERATIONS
RADIO CORPORATION OF AMERICA

FEATURES OF THE KCS131 & 132

A number of interesting new features have been incorporated in the new 1961 RCA Victor black-and-white television receivers using KCS131 and 132 chassis that contribute considerably to their remarkable stability and outstanding performance.

The *I-F section* of these chassis employ new high-efficiency traps, see figure 4, specially designed to minimize the possibility of adjacent channel picture or sound signals from interfering with reception and at the same time provide for optimum acceptance of the desired picture and sound information. A new high-conductance 6GM6 second I-F amplifier tube, used in conjunction with newly designed I-F coupling transformers, provides for very high-gain I-F amplification.

The *video* section of the KCS131 & 132 chassis features a high-level contrast control utilizing a special circuit that minimizes the effect of snow in weak signal areas. This network is formed by capacitor C111 and its associate components; video information is depeaked at high contrast settings.

Special noise cancellation circuitry is employed in KCS131 & 132 chassis that provides for excellent picture stabilization, see figure 5. In this circuitry the *triode* section of a 6EB8 tube is employed to set up a negative noise signal impulse within the input circuit of the sync separator tube that is used to counteract positive noise pulses existing above the tips of sync signals (coming in from the plate circuitry of the video amplifier). Additional sync stabilization (noise cancellation) is provided by the noise pulse information that is taken from the plate circuitry of the video amplifier and directed through the 6DT6 AGC amplifier tube, and high-frequency noise impulse information fed to the control grid of the noise cancellation triode from the low-end of the contrast control, see figure 5.

(Continued on page 4)

SERVICE TIPS RELEASED IN JUNE
TELEVISION
VOLUME XI, ISSUE 6:
Socket Voltages
CTP8A & CTP9A Remote Amplifiers
RADIO and "VICTROLA"
VOLUME XI, ISSUE 5:
Improved Cycling Slide
RP197, RP198 & RP205

THE NUVISTOR

The Nuvistor, a new concept in tube design, is now being incorporated in the "New Vista" tuners recently introduced in a number of RCA Victor's new line television receivers. The Nuvistor represents a revolutionary step forward in vacuum tube design, it is rugged and compact in construction, consumes less power, and its performance is outstanding. Above all, the Nuvistor promises exceptional reliability; only metals and ceramic are used in its construction. All electrodes are cylindrical and are supported on short, tripod-like structures fastened to a ceramic platform which serves as the base of the Nuvistor and the bottom part of the tube envelope, see figure 2.

The Nuvistor employed in the KRK98 "New Vista" tuner is a triode (6CW4). It is housed in a metal shell approximately one-half inch in height (from its base) and approximately three-eighths of an inch in diameter, see figure 1. The 6CW4 Nuvistor combined with the newly designed R-F circuitry of the KRK98 "New Vista" tuner provides for outstanding television receiver reception even in very weak signal areas.

The 6CW4 Nuvistor operates on a heater voltage of 6.3 volts drawing approximately .12 amperes of current. The plate voltage normally operates around 75 volts, and the plate current runs about 9 milliamperes. The plate dissipation is approximately 1 watt.

(Continued on page 2)

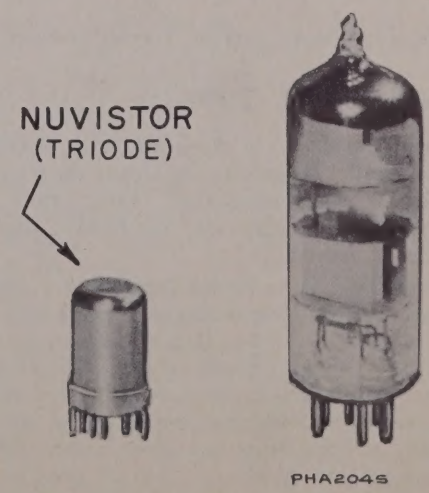

Fig. 1—A Nuvistor Triode as Compared to a Conventional Triode

THE NUVISTOR (cont. from page 1)

Nuvistors can withstand more heat, as well as mechanical stress and strain, than conventional vacuum tubes. The rugged design, precise assembly, and the carefully controlled processing used in the construction of the Nuvistor, all serve to minimize and in certain instances eliminate most of the known causes of vacuum tube failure experienced in the past. Intermittent conditions due to poor welds are virtually eliminated by a brazing process. Gas and impurities can be reduced to a minimum in Nuvistors, since the vacuum process is performed at exceptionally high temperatures.

The lower edge of the Nuvistor shell (shield) is specially formed to provide for two indexing lugs that extend below the base of the tube. One of the lugs is somewhat larger than the other so that the tube may be inserted into its socket in one way only. The indexing lugs are slightly longer than the base pins and thereby provide ample protection for the pins. Pin numbers are molded on the Nuvistor socket to facilitate pin identification.

The small size and close spacing of the elements within the Nuvistor contribute considerably to the formation of a VHF R-F amplifier that offers spectacular low-noise performance and excellent signal gain. The outstanding feature of the 6CW4 Nuvistor employed in the KRK98C "New Vista" tuner is its very low "noise" factor that results in considerably less "snow" in weak signal areas and generally improved pictures in all signal locations.

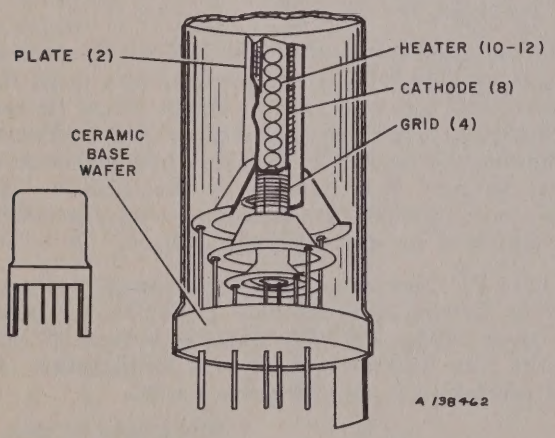

Fig. 2—Cut-away View of Triode Nuvistor

NEW RCA TUBE TYPES

There are several newly designed RCA Victor tubes in the 1961 model television receivers that contribute considerably to the remarkable performance of the instruments. Among these are the 6EM7, the 6GH8, the 6GM6 and the 6FH5.

The *RCA-6EM7* is a husky, octal base, glass type multi-unit tube combining a low-mu triode and a high-mu triode in one envelope. It has been designed particularly for use in a combined vertical-deflection-amplifier and vertical-deflection-oscillator circuit driving picture tubes that have deflection angles up to 110 degrees and operating at high ultor voltages. Triode unit No. 1 has an amplification factor of 5.4; it provides for a high-value of plate current at a low-plate voltage under zero bias conditions which enables the tube to make the best of the total input power of the deflection circuit for scanning purposes.

The new *RCA-6GH8* is a medium-mu triode sharp-cutoff pentode tube now being employed in the 3.58 mc oscillator and control circuitry of the new RCA Victor color television receivers. This tube features low interelectrode leakage which insures very dependable performance. The 6GH8 tube can also be used advantageously as a direct replacement for the 6EA8 tube in any stage of the 1960 or 1961 series color or black and white television receivers except the R-F oscillator and mixer stage in R-F tuners.

The *RCA 6GM6* tube that is now employed in the second I-F stage of all 1961 RCA Victor television receivers has been designed especially for use in gain-controlled picture — I-F stages of television receivers employing intermediate frequencies in the order of 40 megacycles. The 6GM6 features a high transconductance (13,000 micromhos) and relatively low interelectrode capacitance which account for its ability to provide for high gain across a broad band of frequencies. The tube has a semiremote-cutoff characteristic that enables it to handle large signal voltages and minimize signal distortion and cross-modulation.

A new *RCA-6FH5* tube is used in both the wafer switch and turret type tuners employed in the RCA Victor 1961 series black-and-white and color television receivers. The tube is defined as a semiremote-cutoff tetrode; however, grid No. 2 is designed primarily for use as a shield that provides for low grid No. 1-to-plate capacitance; this facilitates neutralization and reduces oscillator radiation. For this reason, the 6FH5 normally functions as a triode. The semiremote-cutoff characteristic of the tube minimizes intermodulation distortion. There are two base-pin connections on the cathode that serve to reduce the effective lead resistance and inductance of the cathode circuitry.

TUBE CHARACTERISTICS

The amplification factor and transconductance of a vacuum tube is often given to express the merit of using it in a particular circuit of a radio or television receiver. A technician should be familiar with these terms.

The amplification factor of a tube is commonly designated by the Greek letter μ (mu). Tubes are generally referred to as being a high-mu, medium-mu, or low-mu tube. A high-mu tube is one supporting an amplification factor of 55 or more; medium-mu tubes in the range of from around 8 to around 55 and low-mu tubes in the range below 7 or 8.

A tube with a high-mu rating, however, is not necessarily always found to be the best amplifier, since the plate resistance of the tube (resistance of the plate-cathode path through the tube) must be taken into account. The ability of the tube to perform as an amplifier depends on the operation that it is called upon to perform. The best all-around indication of the effectiveness of a tube as an amplifier is its transconductance (sometimes referred to as mutual conductance). This characteristic takes into consideration both the amplification factor (μ) of the tube, and its plate resistance (the resistance of the plate-to-cathode path within the tube). The transconductance of a tube is often used to express the merit of a tube as an amplifier.

Actually, the transconductance (g_m) of a tube is determined by dividing the change in plate *current* by the change in grid *voltage* that causes the plate current change (the plate voltage being fixed at the desired operating value). Transconductance is measured in units of conductance, the mho. Practical values of transconductance are very small, so the micromho (one millionth of a mho) is the most commonly used unit. The higher the transconductance the greater are the possibilities of the tube being used as an amplifier.

A FEW POINTS ON TUNERS

If you acquaint yourself with some of the general characteristics of tuners used in television receivers, you will find that you can service them more quickly and easily. Keep in mind that a tuner is designed to provide for the selection of one television channel from among the many signals picked up by the antenna, provide sufficient amplification to set up a good signal-to-noise ratio, and convert the R-F signal to a fixed I-F signal. R-F tuners incorporate three basic stages that must be taken into consideration when service is required:

1. The *R-F amplifier* that performs the job of selecting the desired television signal from among the maze of signals delivered to it from the antenna and rejecting all others. This stage also amplifies the desired signal and feeds it to the grid of the mixer.

2. The *R-F oscillator* which generates a sine-wave output that is coupled to the converter for frequency conversion purposes. (The frequency of the local oscillator determines which television channel signal will be selected and converted to the frequency of the intermediate amplifiers.)

3. The *Converter* which mixes (heterodynes) the R-F signal and oscillator signal in a non-linear circuit and selects the proper difference frequency to send to the I-F section of the receiver.

The presence of snow in the picture (barring the antenna) generally indicates that the R-F amplifier is not functioning properly. The amplitude of snow in a picture is basically dependent on the amplitude of the station signal that is fed into the grid of the mixer. If the input signal to the converter is weak, the signal-to-noise ratio of the tuner will be low and the picture will appear very snowy. Remember that if the mixer and oscillator are functioning some of the signal picked up by the antenna will usually feed through, even though the R-F amplifier may be defective. Capacitive coupling of the antenna lead-in to the grid of the mixer tube serves to bypass the signal around the R-F amplifier. The R-F AGC buss can be checked out quickly by observing the change in signal strength when the AGC terminal is grounded (normally, grounding this terminal should increase the signal strength considerably). Exposed B+ tie points located on the outside of the tuner case provide for a quick check on the voltages supplied to the tuner. Alignment equipment can also be used to great advantage in determining whether or not the R-F section of the tuner is functioning properly. This method, of course, provides for the quickest and most accurate way of checking the actual performance of the tuner R-F circuitry.

The simplest way to determine whether or not the R-F oscillator within the tuner is functioning properly is to check the oscillator injection voltage at the grid of the mixer tube; tuners used in RCA Victor receivers provide a test point (TP-1) which makes it easy to check this voltage. A properly operating oscillator should provide for an injection voltage of around −2 to −3 volts across all channels (see service data). The oscillator can also be checked by measuring its grid bias; if bias is present, the oscillator is working. The frequency of the oscillator can be determined very easily by simply zero beating it against an R-F signal from a calibrated signal generator. The technique of heterodyning (zero beating) a crystal calibrated signal against the oscillator signal can also be used to advantage in determining whether or not the oscillator tends to drift in frequency, and if so, the degree and direction of the drift.

Once the condition of the R-F amplifier and the oscillator have been determined it becomes a simple matter of deduction in determining whether or not it is the mixer that needs attention.

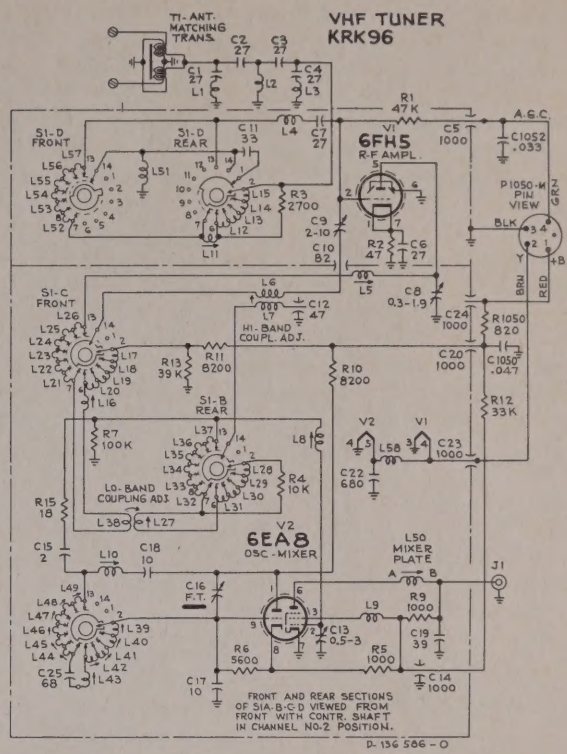

Fig. 3—Schematic Diagram, KRK96 VHF Tuner

Once trouble has been isolated to a particular stage within an R-F tuner the components within the circuit can be checked to pinpoint the source of the trouble. Never hesitate to open a tuner when it requires service. Exercise reasonable precaution and you will find tuner circuitry easy to work on. Tuner alignment is quite stable in most instances, usually nothing more than minor oscillator adjustments are required after a tuner has been repaired.

When checking components within a tuner never probe haphazardly through the wiring, since many of its parts are carefully mounted in a particular position to take into account various capacitive and heat characteristics of neighboring components. Remember too, that many of the parts are small in size and must be mounted with very short leads to function properly. Always replace component parts within a tuner as nearly as possible to their original position. When leads are left too long, their capacitance to the chassis is subject to change during warm-up; this can result in oscillator drift. Keep in mind that many of the small capacitors are sensitive to excessive heat and reasonable care must be taken when soldering them into a circuit to avoid unnecessary damage (too much heat can change the value of a small capacitor). Also keep in mind that a number of the capacitors used in the oscillator section of the tuner are specially selected temperature compensated capacitors having very close tolerances. These components must be replaced with the right part if the tuner is to function properly after repair. Never try to improve on the design of a tuner by putting more space between the components in the circuitry; capacitors are sometimes placed very close to a resistor to take advantage of heat in stabilizing circuit operation. Avoid attempting to form resistor replacements by paralleling components. The increased capacitance can lead to drift problems and parasitic oscillations.

KCS131 & 132 (cont. from page 1)

Both the KCS 131 and 132 chassis incorporate a *newly designed vertical sweep circuit* that employs a new husky dual triode (6EM7), and virtually eliminates the possibility of line bunching in the raster. The new vertical circuitry provides for the application of a negative sync pulse to the cathode of the oscillator tube by using a diode to form a low impedance path for the cathode during the conduction period of the oscillator tube, see figure 5. It should be noted that the diode is incorporated within the same envelope as the 6AV6 first sync tube (if the sync tube is removed the vertical oscillator will not function). In a circuit of this kind a high impedance is formed in the cathode leg of the oscillator to accommodate the application of a sync pulse when the tube is not conducting, yet when the sync pulse triggers the oscillator tube into conduction the diode also conducts and provides for the low-impedance path necessary for oscillator tube operation.

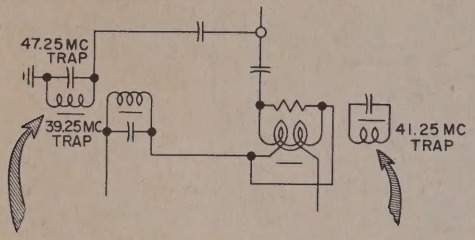

Fig. 4—I-F Traps Used in KCS131 & 132 Chassis

The high-voltage circuitry in both the KCS131 and 132 furnishes a maximum of useable picture power and provides for optimum brightness and picture quality. A husky 6DE4 is used in the damper circuit of KCS131 chassis to provide for the requirements of 21DSP4 kinescopes, while a heavy duty 6AU4 is employed in the damper circuitry of all KCS132 chassis to accommodate the needs of 23EP4 kinescopes.

Note: For all practical purposes the KCS132 differs from the KCS131 only in that the KCS132 is designed to serve a 23 inch 110 degree kinescope while the KCS131 provides for the requirements of a 21 inch, 90 degree kinescope. This involves the horizontal output transformer, deflection yoke, and their associated components.

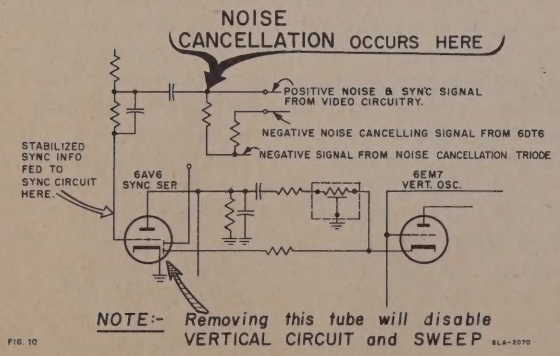
NOISE CANCELLATION OCCURS HERE
POSITIVE NOISE & SYNC SIGNAL FROM VIDEO CIRCUITRY.
NEGATIVE NOISE CANCELLING SIGNAL FROM 6DT6
NEGATIVE SIGNAL FROM NOISE CANCELLATION TRIODE
STABILIZED SYNC INFO FED TO SYNC CIRCUIT HERE.
6AV6 SYNC SEP.
6EM7 VERT. OSC.
NOTE:- Removing this tube will disable VERTICAL CIRCUIT and SWEEP
FIG. 10
BLA-2070

Fig. 5—Noise Cancellation—KCS131 & 132 Chassis

Both the KCS131 and the KCS132 chassis are designed to operate with either the "long range" neutralized triode tuner or the new turret type tuner that serves in conjunction with the new two button remote control system. The tuners used with KCS131 and 132 chassis have plug-in connections that contribute considerably to the serviceability of the units.

SIGNAL-TO-NOISE RATIO

The signal-to-noise ratio that is set up in the input circuitry of a television receiver has a great deal to do with whether or not the receiver is going to provide for good television reception. It is the ratio of the desired signal to that of the interfering noise that rides along with it that is important, not just the strength of the signal alone.

Noise in a radio or television receiver is actually undesired electrical disturbances that cause hissing sounds in audio systems and what is referred to as snow on the screen of a picture tube. These electrical disturbances are classified as one of two types of noise: impulse noise or random noise.

Impulse noise voltages ordinarily originate outside of the receiver and antenna system. Such noise is generated by atmospheric disturbances and man made electrical devices; it is dealt with primarily by considerations given to antenna location and transmission line shielding. A good antenna system contributes considerably to minimizing impulse noise in television and radio reception since, of course, the overall noise ratio is proportional to the strength of the signal applied to the receiver antenna terminals. But, no matter how strongly a desired signal is received, good reception cannot be experienced unless both types of noise are suppressed while the wanted signal is made stronger.

Random noise originates within the body of the antenna system and the receiver itself. This type of noise is generated by the random movement of molecules within the conductors and resistors employed in the construction of the circuitry and the random fluctuations in the flow of electrons from the cathode to the plate of the tubes used in the receiver. The suppression of random noise is dependent primarily upon the design of the input circuitry and R-F tube used in the tuner of the television receiver. The signal-to-noise ratio that is set up here fundamentally forms the signal-to-noise figure of the tuner. The random noise generated in the input of the receiver is amplified to a level far exceeding the random noise generated in the remaining circuits of the receiver.

The "long range" neutralized triode switch tuners and the new turret tuners employed in the 1961 model RCA Victor television receivers offer a very high signal-to-noise figure. The use of the new RCA 6FH5 contributes considerably to this feature. The signal-to-noise ratio of these tuners is surpassed only by the recently introduced "New Vista" tuners that employ the amazing Nuvistor, the 6CW4, in its R-F circuitry.

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